INTERIM GENERAL PLAN
FOR
GREATER DELHI

Prepared by the Town Planning Organisation

MINISTRY OF HEALTH
GOVERNMENT OF INDIA

109 M. of Health

FOREWORD

As Minister for Health I have been greatly worried over happenings in regard to promiscuous buildings and lay-outs in Delhi and New Delhi over the last nine years and the seeming inability of anyone to "hold the line".

Those of us who know Delhi and even those who come here for the first time cannot but be struck by the fact that all is not well with the Capital City.

Matters have really come to a head. There are all-round discomfort and discontent. Traffic jams and accidents, sprawling colonies without the vital conveniences of life in the matter of sanitation, over-crowding everywhere and particularly in miserable slum areas, miles of ribbon developed hut-shops, chronic water-shortage, all add to the distress which is bad at any time but is well nigh intolerable during the rainy season.

It was only natural, once we gained our political independence that DELHI should become an important capital with the eyes of the world on it. It is also natural that today we are trying to build up a Welfare State. These new concepts and the increase of governmental responsibility have meant an increase in the population of government servants, of business firms, of foreign embassies and of international organisations.

Further the partition of our country at the time of gaining independence brought hundreds of thousands of refugees to Delhi for protection. They were welcomed and cared for with the sympathy they merit but the enormous influx of such persons has also entailed endless difficulties for the proper development of the Metropolis.

In other words a bad situation has raced from bad to worse and the time has come to cry a halt to further deterioration.

Now how can this be done? We must immediately control and channel the sprawl; we must allow some reasonably minimum room for a few years' expansion; we must do something urgently about the slum areas. I am glad that a good beginning has been made in this last regard. But piece-meal amelioration cannot ever be the answer to what is a very complicated and vexed problem. The Birla Committee Report on the working of the Improvement Trust was of real help. Though it contained no Master Plan, it pointed out the need for one as also the urgent necessity of one building authority. The moment the Delhi Development Provisional Authority came into

being, a team of Town Planners was appointed to prepare an interim plan.

Such an interim plan is not a new concept. It has been adopted as a device for numerous cities in similar conditions and for the same reasons. No one can claim that the present effort is a real definitive answer or that many of its elements will not be changed or that others will not to need to be much more precise. In any case some of the road solutions in old areas, for example, are years away in the future. Nevertheless, some specific elements in the Plan may be considered definitive.

The ultimate grand objective is a Regional Plan, not just or even necessarily a larger Delhi, but in social, functional and economic fact a three dimensional plan for a really *greater* Delhi. If it is a success, as it should be, I have no doubt that it will not only be significant in itself but even more so as a prototype for the developing cities of our country and, may be, even of Asia. No 'master plan' can be worked out in a brief space of time. It will take several years of hard work and ramified study and imaginative projection. Meantime the Interim Plan is not only a physical "hold the line" operation but also in certain significant ways will lead into the full Plan and will make the latter more an expression of the will and well-being of the people of Delhi, both present and future.

We know that there are lakhs of people living in Delhi whose shelter is inadequate in varying degrees—as is the case in most large cities. The vast majority of the inhabitants in the city proper as well as the larger number in the sprawling new colonies all over and around Delhi too are eking out a mere existence. They have little feeling of having any stake in society or of their civic status, or indeed of any hope that better days lie ahead. It must be here that we have to break new ground by selected pilot projects in urban Community Development directed towards fully involving the people in a wide range of self-help activities. With the experience gained from these initial pilot projects we must progress to projects on a much bigger scale. This is a consummation devoutly to be wished for. Without the peoples' understanding and goodwill no plan can be a success. The movement must perforce be a continuing process and should become a permanent influence in personal, family and civic life.

If we want the people's collaboration for a greater Delhi, the Master Plan must be thoroughly explained to them and therefore a technique must be worked out for securing genuine contact between the planners, their executive and the people. Time and learning by experience and infinite patience are required before this is attained.

But the effort will be a hundredfold worthwhile. As the Master Plan will take time to develop step by step and area by area, there will be ample opportunity for seeking the people's reactions and their own views and needs. The Delhi School of Economics has initiated surveys and studies which will give realistic help. Our own pilot schemes should throw a good deal of light on local living and thus there will be healthy action and interaction at all levels.

Finally what is the Master Plan? What can it accomplish and what are the main problems? What is it that is required of each one of us and how can we work together for it?

Some of the most glaring difficulties of Delhi have already been noted. Even today it takes too long to get from home to the concentrated work centre and to get back again. As the city spreads in various directions such difficulties will multiply. Better internal arrangement and re-arrangement and relationship are needed and our Plan must provide them. New Delhi was built without any heed to old Delhi, and now that they have gone far towards coalescing, the problems proliferate and the traffic jams towards the employment centres of the Secretariat, Connaught Circus and Chandni Chowk must be grappled with.

Delhi also suffers from the unplanned sprawl of all metropolitan areas, a sprawl made possible by the radius of reach of the motor car which, in turn has its revenge in cluttering up the roads. Green spaces and open recreation areas recede further and further. Unplanned growth in Delhi has caused population to run ahead of water supply and sewerage capacity.

The modern answer is to set conscious goals of size and function of city and region so that pleasing and economical plans can be made which will not be outmoded and made ludicrous by arbitry explosions of growth. A greenbelt must be adopted both for a healthy metropolitan breathing space and as a limit to the city's growth. If economic and governmental necessity or desirability indicate a total population greater than can be well accommodated in the central complex, some of that population and its employment centres may be best disposed in satellite cities well beyond the greenbelt as, for example, London is doing.

Modern transport, because it does not recognise any boundaries whether official or political, has made obsolete the concept of a mere city plan. Around cities, therefore, the sprawl is uncontrolled because the city's jurisdiction stops short. Hence we must plan in regional terms and one of the problems to be determined is how big is the region to be?

Another problem that bedevils Delhi and all other metropolises is the mix-up of governmental jurisdictions over-lapping, conflicting rules, even different tax structures. Thus a major headache of all big urban masses is the form of government. If too massive, the ordinary citizen has little interest or allegiance; if too small and too many, there is confusion. Hence, here too we have to find out what is the best form in our particular situation.

Again, is the Master Plan of development within our financial means, or can we find the means? And how long can we afford to take to accomplish it?

These and other basic questions and solutions all enter into the physical, social and economic mosaic that make up a great city and a region. All steps take time to do well but at the summit is always a fine new concept towards which we climb. Meantime, the Interim Plan permits us to move ahead toward this, not slowly, but with necessary deliberation.

There are four elements of the Interim Plan which are at this stage definitively offered for commitment and adoption. These are:

1. Some 3000 acres of land shown for residential development which represent the maximum number of building units that Delhi can develop and build in the next two or three years, *i.e.*, before the final Master Plan is ready according to the housing densities indicated in the Interim Plan report.

2. Some 200 acres of land shown for industrial development of service industries—all this is absolutely necessary in this same period.

3. Resettlement of 'gwalas' and their cattle and as an early priority in further planning, study and action, removal of the slaughter house and ancillary industries to an outlying area.

4. Slum cleaning and improvement which have begun well but must continue at an accelerated pace.

Thus our Interim Plan serves its defined function of providing for the necessities of the next two years, and 'buys' the time we require for the ultimate plan. It indicates only that development which we know we must have and can fulfil, located to the maximum advantage for accessibility and availability or economy of needed utilities and which will not stand in the way of our ultimate studied Master Plan.

It has been estimated that the ultimate Master Plan will take two or three years to develop. But of course priorities will be set up so that certain urgent matters will not need to wait that long, *e.g.*, pilot work in slum clearance, which must be pushed.

Other than those mentioned in a foregoing paragraph, the indications of the Interim Plan are included only for purposes of eliciting opinion, stimulating discussion, and illustrating objectives so that the ultimate studies soon to begin may have the maximum benefit of participation and comment.

It may be re-stated here for reminder and emphasis that planning cannot be in a vacuum, that the citizens must be informed step by step, and must make themselves heard while there is time to consider their views. Just as critical, is the need for debate followed by definite decisions by Government. For example, what about the location of expanding and new government buildings? The alternatives are decentralization within Delhi, decentralization to existing or new satellite towns, or even beyond into Regional locations. Again, what will be Delhi's functional place in the economic and industrial pattern of India? These are some of the basic problems of far-reaching importance which must begin to be earnestly discussed and action thereon decided and which can vastly modify or reverse uncontrolled 'trends'. The planners can help and can throw light on the implications of various, alternative policies. But the decision must be made by Government before the genuine Master Plan can be arrived at.

It may not end this foreword without saying how grateful my Ministry and I are to the enthusiastic and competent body of Town Planners who have produced something worthwhile in a remarkably short time. It has required hard work and rare devotion to duty, all of which are most commendable. I am grateful also to the Institute of Town Planners for their co-operation and to the Bharat Sewak Samaj and the Delhi Municipality for their active help in the amelioration of some slum areas.

To build the India of our dreams is a great venture. In its own way to rebuild our Capital City is also an exciting venture and if all will co-operate, the success of our plans is ensured.

AMRIT KAUR

INTRODUCTION

The Town Planning Organization was set up in December 1955 by the Government of India, Ministry of Health, and was placed under the administrative control of the Chairman, Delhi Improvement Trust. The technical staff sanctioned consisted of one Architect Town Planner and eight Town Planning Officers, beside a number of junior Town Planning Officers and technical assistants. The organization could not come up to its full strength until about the middle of March this year. It is therefore a matter of great satisfaction that, through sheer hard work, this small team of officers has produced a very informative and detailed report on the future development of Greater Delhi. The planners have had to go round every nook and corner of the city inspecting old built-up areas and open spaces around, studying the distribution of population, the existing layout of roads and lanes, analysing the distribution of traffic, the need of educational institutions and a variety of other things that go to constitute the civic life of the Capital City. The enormousness of the task can be judged from the voluminous data collected by these officers and the manner in which they have sifted and utilised them. It is hoped that those who will have an opportunity of studying the proposals will appreciate the effort made by the Town Planning Organization, even if they do not agree to all the proposals made by its officers.

2. It is somewhat of a paradox that, though the Plan for a town depends on precise data, many of its long term proposals tend to be somewhat vague and indefinite. On the other hand, it is perhaps not unnatural that a long term plan can only provide guide-posts and cannot circumscribe all activities once and for all. A city is not merely a conglomeration of buildings and roads and other structures: it symbolises the life of the whole community. A plan for a city is therefore a study of human life in a concentrated area and has to keep in view the impact of the social habits of groups and individuals living therein. These proposals have taken all these aspects into consideration.

3. By its very nature, a plan for a Capital City leaves scope for divergent views and it would be presumptuous on the part of any one to claim having said the last word on the subject. These proposals make no such claim but only seek to lay before the people and the Government a system of thinking on this comple

matter. The basic objectives, however, must be the same—the creation of an environment in which people can live a good and healthy life as a large social group and ensuring that the activities of individuals as well as of smaller homogenous groups not only go on smoothly, but do not conflict with one another. Some of these proposals might appear to be somewhat fanciful, but most people will agree that a certain degree of idealism is perhaps a virtue in this matter. Whatever the ultimate shape of the proposals, they are bound to aim high and provide for living and working conditions which one would wish to have. And there is no harm in transporting a little poetry from its bucolic realms to urban planning! Fundamentally, however, the planners have studied the problem from a realistic and practical point of view.

4. I am grateful on behalf of the Organization to Rajkumari Amrit Kaur, Minister of Health, Government of India, for the encouragement she has given to the planners and for her now kindly agreeing to write a foreword to this publication. My technical colleagues of the Town Planning Organization Sri Shivnath Prasad, Architect Town Planner, and Sarvashri C. S. Gupte, Banarsi D. Kambo, V. A. Philipos, B. G. Fernandes, Srimanohar, R. L. Bawa, M. S. Malik, Sayed S. Shafi, S. G. Pradhan and their collaborators deserve special appreciation for the speed and thoroughness of their performance. Various public bodies and organizations have helped them with statistical data and information and to them also I take this opportunity of expressing thankfulness.

G. MUKEHARJI,
Chairman,
Delhi Improvement Trust.

New Delhi, 6th September 1956.

SUMMARY OF RECOMMENDATIONS

This section summarizes the major proposals that are made in the Interim General Plan which is developed on a preliminary survey of the physical and land-use characteristic of the Greater Delhi Area. For the purpose of this tentative plan these studies and proposals are mainly confined within the urban core as indicated on the map.

It was not possible during this stage to ascertain with precision the potential of population, economic base and the limits to urbanisation of the Region on a long-range basis. Therefore, the recommendations of the Interim General Plan are meant only as a guide for the physical development of this area before a comprehensive plan for the whole region is developed.

The major proposals are based on a basic premise: distribution of population in order to achieve a logical and balanced density pattern. This is based on a further assumption that the communications could be greatly improved.

In the foreword to this Interim Plan, the actual extent of the work has been listed, on which decision is requested. The items listed below as recommendations are tentatively offered to stimulate public discussion and consideration, and further planning in the next two years, and are not offered for adoption at this time.

1. *Major Recommendations*:

The Government of India being the largest basic employer in this region, it is suggested that serious consideration should be given for a planned decentralisation to outer areas and even outside the Delhi region. Of course the precise sites could only be selected after a detailed study, but for the interim period the following proposals are made:

*—the present Secretariat to remain as the nucleus of Central Government. Further extension to be confined only upto Queensway and the vehicular access to these buildings to be provided only from King Edward Road and Queen Victoria Road.

*—the area between Queensway and India Gate should be reserved for developing a Convention and National Cultural Centre.

*—The Old Secretariat site, at present accommodating offices of Delhi State Government is quite suitable for future expansion of Government Offices in that area.

*—the site of the proposed Defence GHQ near the Central Secretariat would, with advantage, be located in the south western part of the urban area, preferably in the Cantonment area itself.

2. *Business and Commercial*:

*—Connaught Place to remain as the main shopping centre of the metropolis with its commercial, recreational and retail activities. It is proposed to enlarge this area, and to relieve it of all through traffic.

*—Old City centre to be redeveloped in two distinct parts—commercial and wholesale business between Chandni Chowk and Khari Baoli, and the financial and retail area in Chandni Chowk.

*—Chandni Chowk to be redeveloped eventually as a grand promenade from where all vehicular traffic should be excluded. It is aimed to create architecturally an Indian bazar with landscape plazas, side-walk cafes and reflecting pools.

*—Six community shopping centres are proposed to cater to the needs of the new residential communities. They are—

1. North of Old Secretariat.
2. At the junction of Shankar Road and Pusa Road.
3. At the junction of Ring Road and Najafgarh Road.
4. South west of Vinay Nagar at the Outer Ring Road.
5. North of Kalkaji.
6. Shahdara Area.

Besides the above tentative locations certain improvements like off-street parking easy access should be made to existing shopping centres.

Neighbourhood shopping has not been shown on the plan but will be located in the Comprehensive Plan after detailed study.

3. *Industrial*:

In the absence of detailed analysis, provision and location of industrial and manufacturing sites are based on the availability of railroad and other public facilities.

*—It is proposed to have four planned industrial districts namely—

1. Rohtak Road for storage and light industry.
2. Najafgarh Road for storage and light industry.
3. Okhla for light and medium industry.
4. Shahdara for medium industry.

*—It would be desirable both in the interest of the industry and the city, to encourage on eventual location of factories like Delhi Cloth Mills, Birla Mills and Ayodhya Textiles in the planned Industrial Districts outside the residential area.

*—Detailed investigations should be made to provide space for small-scale non-abnoxious cottage and service industries in selected communities to be based on the performance standards.

*—It is proposed to relocate the Slaughter House and ancillary trades on the south of Rohtak Road in the western corner of the urban area as shown on the plan.

*—Four areas have been shown which should be reserved for the Dairy Farms for relieving the city from the cattles and supplying milk and products to the urban area.

4. *Residential:*

The principles governing the future residential areas are—

*Size and design of neighbourhood for an optimum population including safe roads and circulation.

*variety of dwelling units to suit different social groups and incomes.

*diversity of population and occupation.

*facilities for education, parks and shopping.

*tentative net densities considered during the Interim General Plan.

High: 151 to 200 persons/acre.

Medium High: 101 to 150 persons/acre.

Low Medium: 51 to 100 persons/acre.

Low: 0 to 50 persons/acre.

Additional residential areas are shown mainly on west and south. Major residential areas are also proposed in Shahdara.

5. *Recreation and open spaces:*

*—River Front from Wazirabad in the North to Okhla in south to be developed as a major recreation area. Provision for the Zoological gardens, race course, bathing ghats, swimming beaches and pools, parks including children's tot lots, boating and fishing and open air theatres to be made in this area. The whole area to be inter-connected by a parkway and pedestrian walks.

*—the ridge to be preserved as natural green area with some planned recreational and picnic spots.

*—Mehrauli, Qutab Minar and Hauz Khas to be developed for intensive recreation.

*—Existing parks to be enlarged and improved:

1. Queen's Garden upto Red Fort.
2. Jumma Masjid area to be cleared of Junk yards and to be made a part of large open space connecting to the Edward Park and the adjacent areas.
3. Nicholson gardens in Civil Lines.

4. Ajmal Khan Park in Karol Bagh to be linked with Idgah and then to the ridge.

*—Proposed new parks are:

1. Near Coronation Memorial in Civil Lines.
2. North of proposed Najafgarh Community shopping Centre.
3. North of proposed Karol Bagh/Patel Nagar community shopping centre.
4. South of proposed Vinay Nagar community shopping Centre.
5. West of Kailash Colony.

*—It is suggested that a park and Recreation Department be established to acquire, develop and maintain the various facilities for active and passive recreation like open air theatres, parks and playgrounds.

6. *Education and Cultural:*

1. It is proposed to enlarge the North campus (Delhi State University) to include the area presently occupied by the Defence Department. This campus to be reserved mainly for post-graduate studies.
2. A south campus is proposed at the intersection of Kitchner Road and Outer Ring Road to accommodate colleges for under-graduate studies in the southern area.
3. The Jamia Nagar to be developed as a Rural Educational centre.
4. The sites and locations of public schools, adult education centres and colleges to be determined during the phase of comprehensive plan based on the population and age characteristics.
5. Central vista from Queensway to National Stadium to be developed as convention and cultural centre. Red Fort and the adjoining area to be maintained and developed for selected cultural activities.

7. *Redevelopment:*

Redevelopment of Blighted and sub-standard areas is one of the most important problems of this area. Schemes for slum clearance and rehousing can be prepared realistically only after a detailed survey of the physical and socio-economic characteristics of such areas.

Most of the Old Delhi area is blighted and lacks basic facilities for healthy living. It is suggested to prepare redevelopment plans including rehousing schemes in the comprehensive plan stage.

As already proposed objectionable industries and trades non-conforming to the residential uses, like the slaughter house, lime-kilns, potteries, etc. to be moved out and relocated off the residential areas.

8. *Circulation*:

1. The major proposals for Circulation in the Interim General Plan are:

The National bye-pass road as being constructed now, to be extended towards North of Coronation Memorial to join the G.T. Road and towards south upto Mathura Road. This will lead to bye-passing of the urban area completely.

Two major circular roads are proposed—

(a) Inner Ring Road proposed from Humayun's Tomb along Lodhi Road, through Diplomatic Enclave finally merging in the National Bye-pass near Kashmere Gate.

(b) Inner loop to carry traffic to and from work centres, starting from Teliwara, Mondhewala road and Ibbestson Road *via* Queen Victoria Road and finally to Mathura Road.

Creation of other arterial, sub-arterial, major and local roads with different cross-sections and closing of certain roads for vehicular traffic.

These include:

Rohtak Road
Najafgarh Road
Shankar Road
Qutab Road
Grand Trunk Road
And Ring Roads

It is proposed to provide a link between Shahjahanabad and New Delhi. For future development of Shahdara as a new urban centre a change in alignment of railway line as well as of Grand Trunk Road east of Jumna to bye-pass Shahdara is proposed. In order to provide access and open the area east of Jumna, it is proposed to construct a new Rail-*cum*-road Bridge over Jumna river near Humayun's Tomb.

The need for a bigger and better Airport for Delhi is obvious. A tentative site for a new Civil Airport South of Shahdara is reserved in the Plan. This is subject to study and revision in the Comprehensive Plan Stage.

It is suggested that Municipal Parking facilities should be provided for cars, buses, trucks, cycles, rickshaws and tongas. Details for actual locations to be developed in the Comprehensive Plan Stage.

It is proposed to build special cycle tracks connecting strategically located offices and residential areas.

It is suggested that Rules and Regulations be framed for movement of different types of traffic in the city.

9. *Utilities*:

Provision of water, sewerage and drainage facilities is the major limiting factor to the growth of healthy physical development.

It is roughly estimated that more than half of the population of Old Delhi and even some of the newly developed areas are unsewered. Shahdara does not have even a filtered water supply.

It is proposed that a regional water and sewerage plan should be prepared on the basis of land use recommendations in the Comprehensive-Plan.

It is recommended that water and sewer facilities should be provided to all the residential areas, which are unserviced to-day.

It is proposed to provide facilities in Shahdara Area.

In combination with the reservation and development of the river front area for recreational facilities, a system of flood control shall be evolved by building 'bunds' and river training spurs, etc.

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CHAPTER I

CONCEPT OF THE PLAN

What is Planning?

Land is the basic resource of any community and city planning concerns itself with the controlled use of land to the highest advantage, and for the general welfare of the community. Once land has been committed to a certain use it is difficult to change that use easily, so the planning process is the process of evaluating the advantages and disadvantages of one use as against another, and with the providing of adequate land for the various types of land use in a community.

Essentially planning is a process by which a community makes some decisions about its pattern, shape, and organisation in the future. Once such a general framework outlining aims and objectives has been established, then the city can relate its day to day problems to this framework, and make its decisions accordingly. These decisions are then part of a plan and logically relate to each other. Furthermore, there are also available to those communities that will use them, legal tools for working towards the general aims and objectives of a plan. Some of these are zoning laws, subdivision control, capital improvement programming and urban redevelopment.

The importance of and need for planning in Delhi is demonstrated at length in other chapters of this report, so that it is not necessary to labour the point here. It will suffice to say that many official committees dealing with the problems of Delhi have commented, time and again, on the lack of a general plan for Delhi.

Functions of a Master Plan

The general plan or master plan as it is sometimes called, consisting of maps, diagrams, charts, and descriptive material provides a sense of direction for the community, and in addition fulfills other functions which are:

Policy Determination Function. The Master Plan enables the administering authority to view all proposed projects against a clear picture of desirable future development for the community.

Technical Guide and Adjustment Function. The Master Plan enables public and private organisations that do not require legislative action during early study phases to relate their projects to the policies expressed in the plan, and enables adjustment of the plan when desirable.

The criteria of the master plan are that it should be a comprehensive, long term, general plan for physical development.

THE MASTER PLAN IS COMPREHENSIVE because it deals with all the major physical elements, that is to say, Land Use, Circulation and Public Facilities. It relates residential needs to commercial, industrial and public needs. Where it is thought necessary the master plan also includes areas beyond the political boundaries of a community.

THE MASTER PLAN IS LONG RANGE because it sets down at one time the best thinking of the planning staff, administrative authority and the citizenry, as to the most desirable direction of development for the community. A master plan looks ahead as far as it is practical (perhaps 20 to 30 years) anticipates change and plans for it.

THE MASTER PLAN IS GENERAL because as it is long range and comprehensive, it must be general. Only approximate sizes and locations of different elements can be shown, but relationships are clearly indicated. The plan is a basis for more detailed studies of specific areas or elements.

The Process of Planning

Any planning programme begins with research and with the compilation of data relating to the physical, social, economic, cultural and political trends in a community. These generally include facts about the history, geography, geology, and natural resources, topography, weather and prevailing winds in the community and region; about the population, its age composition, employment and income level; about the land, the location, types and extent of residential, commercial and industrial areas, farms and open land; about the economic base, industry, agriculture, trade and tax base, about the circulation facilities, streets, highways, parking places, and mass transit; about the public facilities, schools, public buildings, recreational areas and utilities.

What are the reasons for the growth of the city in its particular location? What is the major activity that has accounted for the growth of the city in the past, and what is the likely trend of the future? To all such questions and more, answers must be sought before any planning programmes can get under way.

A planning programme is only as good as its research base, because the plan represents a number of significant decisions that have been made on the basis of certain facts and assumptions. Therefore if the basic research is incomplete, weak, or spotty, this must necessarily be reflected in the planning decisions. It is important to stress this point because of an almost complete absence of basic statistical and planning data in our country. The planner must therefore carry out his own field surveys, and chart and plot the data that he needs, and while this is not an impossible task, it is a tedious and time-consuming one. Indian conditions and behaviour patterns differ sufficiently enough in their most significant characteristics, to make it difficult to use basic data and standards from other countries, even with interpolation.

The interim plan and its relation to the comprehensive plan

The Comprehensive General Plan is prepared following a thorough study, and necessarily takes a considerable amount of time in preparation. But in some communities where there is considerable pressure for development, it is often not possible to defer major decisions until this thorough and complete study has been made. In such cases the Interim General Plan serves to guide development until a more thoroughly studied general plan is prepared, reviewed by the public, and adopted by the administrative authority. The Interim General Plan is prepared in a short period of time, and without the benefit of extensive research, and cannot therefore be a substitute for a comprehensive plan. It is in the nature of a stop-gap operation. The Interim General Plan has all the characteristics of a Comprehensive Plan, except that where the Comprehensive Plan is long range, the Interim Plan is short range. It is only concerned with change and development in the immediate future during which time a more thorough and detailed study will be made. Thus it is rarely that an Interim Plan will recommend bold and sweeping changes, as its major concern is to prepare the ground for planning and to avoid some of the more obvious mistakes that might raise difficulties later on.

This Introductory material has been assembled from numerous sources for the purpose of giving the lay person some idea of the planning process. Among the most helpful sources were the following and grateful acknowledgement is hearby made for the use of the material and ideas :—

City Planning and Urban Development.—U. S. Chamber of Commerce.
Local Planning Administration.—Howard Menhinick, Ed.
Mr. Planning Commissioner.—Harold Miller.
Planning for Growth.—Hal Wise, Editor.

CHAPTER II

INTRODUCTION TO DELHI

Historical Background

The origin of the name of Delhi is lost in antiquity and the city is known to have flourished under various names. It is generally presumed that the corrupted names Dilli, Dehli and finally Delhi were evolved after the name of Raja Dillu, a member of the Maurya Dynasty who reigned in the 1st Century B.C.

Ancient legend has it that *'he who rules Delhi, rules India'* and it is in recognition of this strategic position that Delhi has been the ancient and historic capital of India for centuries. On the plains of Delhi are the ruins of six or more cities that at one time or another were the capitals of mighty kingdoms and empires.

Of the first city of Delhi, Indraprastha, little remains outside the pages of the Mahabharatha. The city was founded by the Pandavas around 1400 B.C. and is believed to have been located somewhere between Purana Kila and Humayun's Tomb. The ruins of Lalkot or Old Delhi, as it is sometimes called, which lie near Mehrauli mark the last stronghold of Hindu rule in Delhi for it was at that time in the 12th century, after the defeat of Rai Pithora, that Delhi passed into Muslim hands, and so remained until the coming of the British Raj.

The various Muslim dynasties have left behind them an imposing array of monuments and deserted cities, but it was not until the reign of Shahjahan in the 16th Century, that the City reached its zenith. It was this Mogul Emperor, the builder of the Taj Mahal, who gave Delhi its magnificient Red Fort and Jama Masjid. After the death of Aurangzeb, Mogul power waned and the British gradually gained control over the whole country.

The East India Company's capital had been located at Calcutta, but when the affairs of India passed into the hands of the British Government, it was decided to move the capital from Calcutta. Accordingly at the Delhi Durbar in 1911, King George V announced that the seat of Government would be shifted to Delhi, and that an entirely new city would be built to house the capital. This was the present New Delhi, and it may be of interest to note that while the site selection committee had recommended Saugor in the Central Provinces as a site for the new capital, because of its equable climate and central location, the British Government chose Delhi in deference to the age old tradition that *"he who rules Delhi, rules India"*.

Development of the City

Sir Edwin Lutyens headed the committee of British architects who were responsible for designing the new capital city. An original site to the north of Delhi was abandoned, because the area was cut in two by the Ridge, and was also subject to inundation during the monsoon. The new city was located at Raisina, to the south of Shahjahanabad, and named with a singular lack of imagination, New Delhi.

The first committee report on the selection of a site, included the partly developed Pahargunj area within its scope, but this was later abandoned because of the high cost of land and the necessity of paying compensation to those whose homes would be destroyed. It was felt that this would make urban redevelopment prohibitively expensive. The area in question lies between Old (Shahjahanabad) and New Delhi, and with the building of the new capital it was inevitable that the pressure for development would grow more intense. Since Government had excluded Pahargunj from the scope of their plans, it grew in an unplanned fashion and to-day the entire area can largely be classified as a slum. The cost of urban redevelopment and slum clearance in Pahargunj to-day, will be many times what it would have been a quarter of a century ago, when government left it to shift for itself. There is a moral here for those in authority, if only they will see it.

Leaving Pahargunj aside was perhaps a mistake, but Lutyens and Baker appear to have entirely ignored the old city in developing their plans for New Delhi. The congestion of population within the old city was, perhaps, almost as high as it is to-day and yet no scheme for re-distribution of the population and redevelopment of the area was proposed. If the two cities were expected to grow together and form a whole, the connecting roads between them were too few to be of any use, as we are finding out to-day.

New Delhi, however, was laid out and developed as a capital city by Government who retained ownership of all land, even that developed by the private sector. Given such ideal conditions, the development of Delhi should have proceeded along sound planning principles and in an integrated fashion. But this has not been the case, and an examination of the record shows that it has not been so, not because of a lack of necessary powers. Rather it has been because of a failure to co-ordinate policies among the different agencies of the Government involved in land development.

Almost twenty years ago the Delhi Development Committee reported (1939) that no single authority had a complete picture of any general plan, and that while there was no conscious intent to work at cross purposes, this appeared to be the inevitable result of the workings of so many agencies. The development Committee recommended the formation of an advisory committee to co-ordinate the actions of the different agencies involved in the development of the Delhi area.

Not much was done about this recommendation, and things continued on in their old way when in 1947, following the partition of the country, over half a million refugees moved into Delhi intensifying an already acute housing problem. Temporary camps and shelters were erected by Government to house this vast multitude, but these camps were unable to provide adequate shelter during the fierce dust storms, monsoon rains and floods of Delhi.

The old development plans had not foreseen any such drastic and sudden immigration into Delhi, nor had they visualised the emergence of Delhi as the growing capital of an independent nation. Thus Government were not only called upon to provide shelter for the homeless refugees, but also space for their own rapidly expanding offices, foreign diplomatic missions and embassies that came into being almost overnight. Under this pressure many development schemes were prepared both in the public and private sector. This *"ad hoc"* planning enabled Government to provide shelter of a sort for the refugees, and needed office accommodation for themselves and the foreign embassies but as most of this planning was done with little foresight or imagination, and without any co-ordination, Delhi is now faced with some severe problems that might have been avoided.

The Birla Committee reported in 1951 that there was *"neither co-ordination, nor overall supervision and planning of the activities of these agencies"*. Accordingly the committee recommended that, as Delhi was a single unit it should have a single authority to plan and control development of land, and to provide utilities and services.

The Delhi Development (Provisional) Authority was created a few years (1955) after the publication of the Birla Commission Report. The Authority has control over and plans all new development within Delhi State. The Town Planning Organisation of the Ministry of Health is an advisory body to the Delhi Development (Provisional) Authority and advises the Authority on all matters relating to planning. This administrative arrangement has been in force for a few months, and the benefits of a unified approach to planning problems are just beginning to be felt. In the future it may be necessary to modify some of the existing administrative arrangements, keeping in mind the necessity of tackling the problems of Delhi within the framework of a comprehensive plan.

Physical Description

Delhi State consists of 10 towns and 304 villages making it one of the smallest states in India. Its greatest length is 33 miles and its greatest breadth is 30 miles. The state covers an area of 577·6 sq. miles, most of it lying on the western banks of the Jamuna.

The river Jamuna flows through the state in a north-to-south direction, and enters the state at a point near Jhanti. The river has always been the major source of water supply for the city, but it was not until 1889 that the first water works were established. The present intake works at Wazirabad, to the north of the city, were established in 1925.

The dominating physical feature of the state is the Ridge, the last spur thrown out by the Aravalis towards the rich and level plains of Hindustan. The Ridge almost reaches the water's edge at the small village of Wazirabad, then runs parallel to the river encircling Shahjahanabad and extending to the western side of New Delhi, where on one of its spurs are situated the Government of India Secretariat and Rastrapathi Bhavan. It then runs towards the Qutab Minar and Mehrauli where it throws out numerous branches, some of which extend into the Gurgaon district and others push eastward towards the river. The Fort of Tughlaqabad rests on one of the highest spurs of the Ridge.

The traingular plain between the Jamuna and the Ridge, with its apex at Wazirabad and the base extending between Tughlaqabad and Mehrauli, has been the site of numerous cities and bears the name of *"Khandarat"* (ruins and boulders) while the southern portion near Mehrauli and Tughlaqabad is known as *"Kohi"* (hilly). The general slope of the state is from north to south as is the course of the Jamuna. The low lying land along the river banks, which is subject to inundation during the monsoon is called *"Khadar"*. The tract lying to the north of the ridge and to the west of the Grand Trunk Road, is a level plain known as *"Bangar"* and this rich agricultural land is largely irrigated by the Western Jumna Canal. There is a depression near the town of Najafgarh where water from the western side of the Ridge accumulates during the rainy season, and forms into what is known as the Najafgarh *"Jhil"* (lake). From the *"Jhil"* an escape has been constructed to carry off the surplus water to the Jumna, at a point just above the village of Wazirabad.

Climate and Rainfall

Climatically the year can be divided into four seasons as folows:—

1. Winter	...	December to March.
2. Summer	...	April to June.
3. Monsoon	...	July to September.
4. Post Monsoon	...	October to November.

The weather in winter is generally fine with cold, dry, west to north westerly winds. The day temperature in winter generally swings from 70.F to 85.F and night temperature from 40.F to 55.F. The total rainfall during this period is less than 3 inches.

The summer is the hottest part of the year with day temperatures frequently reaching 105.F or more. In this season the neighbouring regions of Rajasthan, Punjab and Uttar Pradesh get heated up and consequently give rise to local thunderstorms and duststorms which affect Delhi during the months of May and June. Only about 4 inches of rain falls during this season.

The monsoon begins in the middle of June and lasts until the end of September. It rains constantly during this period with a total of 22 inches of rainfall being recorded, out of an annual total of 30 inches.

Political Organisation

Delhi was conferred the status of a Part 'C' State under the Constitution of India, and it came into existence as a separate State on the 17th March, 1952. Prior to that date, Delhi had had the status of a Chief Commissioner's Province. The responsibility for the administration of the State vests with the President of India, who exercises control through a Chief Commissioner appointed by him. There is a legislative assembly consisting of 48 members, and a Council of Ministers who aid and advise the Chief Commissioner. The State has one seat in the Rajya Sabha (Council of States) and four in the Lok Sabha (House of the People).

PRESENTATION OF THE DATA

CHAPTER III

LAND USE

The kind of city we have to-day is determined, to a very great extent, by the way our land is used at present, how factories, shopping districts, Government Offices and other work areas fit in with the land used for residences and other public and semi-public uses such as educational, cultural and recreational areas.

There are approximately 110 Square Miles of land within the corporate boundaries of the eight Municipal and Notified Area Committees* which form Greater Delhi. More than half of this is either used for agricultural purposes or is covered by the ridge. The remaining half is developed for residences, business and commercial uses, industry, parks and recreation, schools, hospitals and other public buildings, government offices and other public and semi-public uses.

During the earlier part of this year a general field survey of all land within this incorporated area was conducted as part of the basic studies necessary for the formulation of interim proposals to guide the immediate future growth of Delhi. The results of this interim survey are summarised in Appendix I, Table No. 1 and also presented in Chart A. It shows the acreage devoted to each type of land use and its percentage of the entire notified area, as well as of the actual developed area within the notified area.

The largest single "Use" is vacant land which is 36 per cent. of the total land within the notified area. This figure also includes all the land used by the principal highways coming into the urban area and those parts of the Jumna River that are included within the incorporated area. Together with the land under agricultural use, vacant land would amount to 38,790 acres or more than 55 per cent. of the total incorporated area.

Residential use comes next and covers 13,270 acres or about 19 per cent. of the total incorporated area. This includes both Government and private housing with the three densities—low, medium and high. Land taken up by the streets serving these residential areas, the small parks and open spaces and isolated local shopping centres within these residential areas, are also included in the above calculations.

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*The eight Municipal and Notified Area Committees hereafter referred to as "Incorporated Area" are:

1. Notified Area Committee (Civil Station).
2. Delhi Municipal Committee.
3. Fort Notified Area Committee.
4. New Delhi Municipal Committee.
5. West Delhi Municipal Committee.
6. South Delhi Municipal Committee.
7. Notified Area—Cantonment Board.
8. Shahdara Municipal Committee.

Educational institutions and other public Buildings like post and telegraph offices, police and fire stations, libraries, radio, wireless and transmitting stations and selected monuments of historical importance cover about 4,030 acres (5·7 per cent. of the incorporated area).

Industry covers just about the same acreage as the Educational Institutions and other Public Buildings—3,960 acres (5·6 per cent.). Out of this total area only 1,100 acres (1·6 per cent.) are intensively developed for industrial uses and warehousing purposes. This includes both light and medium industries as classified on the existing land use map. The remaining 2,360 acres. (4·0 per cent.) are covered by the extractive industries such as stone quarries and brick kilns. Such uses are subject to relocation every two years or so, as the raw material is exhausted.

The Ministry of Defence control about 2,830 acres (4·0 per cent.) of the total incorporated area. Railways land and the two Airports** take up another 2,500 acres (3·5 per cent.)

Public Parks, open spaces and other private recreation areas cover 2,490 acres (2·1 per cent.) of the total incorporated area. Major concentration of government offices including all local municipal, state and central government and the President's Estate account for only 2 per cent. (1,370 acres) of the total incorporated area. Retail Business and General Commercial activities cover less than 1 per cent. (580 acres) of the total incorporated area.

There are some good orchards in our city, mostly towards the north west which cover over 1,550 acres (2·2 per cent.).

The generalised existing land use (Map No. 3) shows, in broad terms and under different colours, how these various types of land uses are distributed in our city.

We have to have industries to provide enough employment opportunities. There must be ample land for government offices because government is the prime factor for the existence of this Metropolis. We need adequate shopping areas properly located in relation to the residential districts to satisfy the daily needs of the community as well as for occasional shopping. Similarly adequate number and proper locations of all grades of educational institutions are necessary to minimise travel distance and to ensure safety of the school going children. Ample parks and open spaces are required within each residential neighbourhood for children as well as for adults' recreation. Other community facilities such as post and telegraph offices, police and fire stations, health centres, libraries, community buildings theatres, auditoriums, swimming pools etc., which are the basic requirements for healthful living and sound functioning of a community, must also be properly located according to the needs of the various residential areas.

**Safdarjung and Palam Airports. The area covered by Palam Airport is excluded while working out the total area under the Cantonment Board.

All these uses, if properly distributed on the land, will ensure healthier growth of our community and make Delhi a better place to work, live and play. On the other hand the same uses, if permitted to develop haphazardly, as the trends have been in the past, will create chaos, develop blight, slums and unhealthy environments in our city.

The results* of the above survey indicate how much land under each of the eight municipal or notified area committees is actually developed at present and how much land is available for future expansion of our city.

From the above data, we find that most of the vacant land is concentrated towards the west and south of the city. Almost half of the land under the Notified Area Committee—Civil Lines, lies vacant. As much as 86 per cent. of the land in Shahdara is vacant, possibly because large areas are subject to floods almost every year. Over 60 per cent. of the area under the Cantonment Board lies undeveloped. A major physical feature in Delhi is the ridge, running north-south, which should not be developed intensively but perhaps, maintained as a regional park and open space for the use of the entire community.

Mehrauli Notified Area Committee, which lies outside the incorporated area covers about 121 acres and of this more than 60 per cent. is vacant land. A large proportion lies towards east of the Mehrauli village immediately south of the Qutab Minar Park. There is also another large parcel of open land west of the village and immediately north of the Mehrauli Palam Road. Part of this western area contains a big orchard of mango trees.

In addition to these large tracts of open land outside the present developed areas, there are still many undeveloped areas within the actual developed area.

Land use by Government Offices

The Union Government is the primary source of employment in Delhi. Approximately 40 per cent.† of the population in Urban Delhi is dependent upon government jobs. Let us, therefore, first discuss the present government activity, their future needs and the problems arising therefrom.

Government Offices occupy approximately 1,370 acres (1·9 per cent.) of the total incorporated area and 4·40 per cent. of the actual developed area. Of these 1,370 acres, the major users are the President's Estate covering 330 acres and the Diplomat's Enclave covering about 480 acres. The rest 560 acres are used by actual offices of the local, State and Central Government. Map No. 5 shows how the above three types are distributed in our city.

The needs for office accommodation in Delhi has been increasing consistently through the years. Prior to our independence since major policy decisions were made by the Government of United Kingdom, the present North and South Blocks of the Secretariat

*Appendix I—Table No. 2.

†Contributory Health Scheme (Ministry of Health) and Local and State Government Offices.

provided ample accommodation to meet the demands of the Government of India. During the war additional hutments were built near the Secretariat to meet the demand. After independence, new responsibilities were called for to meet the demands of the new republic, and this demanded more space to house the new offices. This created considerable congestion and overcrowding in the existing accommodation available, and not until very recently did the Government make efforts to build additional permanent buildings to cope with the growing demand.

There will be increasing need for more office space, and this will have to be met. At present about 40 per cent. of the population of Delhi depends upon Government jobs. This trend is likely to continue in the foreseeable future.

In framing policies it was agreed that the Government activity will continue to increase in India and that will result in increase in Government jobs in Delhi also. Accepting this basis, it was also agreed that the Government activity should not be highly centralised. Such related Central Government Offices that need not be located in Delhi may be moved to other urban areas which would help relieve part of this present congestion. This will also ease the housing problem to a certain extent.

Following a thorough survey and detailed study to analyse the question of shifting offices to other cities and a complete comprehensive scheme for their proper location must be prepared taking into account their present and future needs and new buildings should be erected in accordance with that scheme.

The Ministry of Defence is considering building a permanent Defence Headquarters. Advantage should be taken of this opportunity to consider the possibility of locating the Defence Secretariat building outside the Central Secretariat area, perhaps, somewhere near Delhi Cantt. Further analysis of the problem is essential before a definite decision can be made but this opportunity should not be lost. Another office that might perhaps be re-located is the Headquarters of the Northern Railway. The space occupied by them could be utilised by some other Government Departments that must be maintained in Delhi, if Railways can be convinced on this matter.

In the Interim General Plan it is recommended that all the Government Offices that are now scattered all over the city in numerous public and private buildings should be consolidated. An integrated development for these offices should take place on both sides of our Central Vista in continuation of the two new Secretariat Blocks. Such a planned development could also include other public buildings like museums, art galleries, national library etc.

Industrial Land Use

Though industrial land uses constitute only 5·6 per cent. of the total incorporated area, it forms 12·6 per cent. of the actual developed area in Delhi. Of these 3,960 acres approximately 1,100 are intensively developed and the other 2,860 acres are tracts of open land used for brick-kilns and stone quarries. Of the 1,100 acres intensively

developed about 300 are under light and service industries* and also include all kinds of godowns, storage sheds, warehouses and depots. The remaining 800 acres are taken up by medium† type of manufacturing establishments. This includes all textile mills, flour mills etc.

Map No. 5 shows the distribution of all these types of industries in our city. In March 1951 there were 3,479 industrial establishments, excluding those working on cottage scale, and they employed 49,564 workers.† Appendix I, Table No. 3 shows, the types of establishments, their number, and total number of persons employed. The capital investment in all these establishments amounts to a little over Rs. 160,000,000 and their optimum annual productive capacity is estimated at Rs. 780,000,000.‡

Industry brings a stable economic base to the community and Delhi needs factories to provide employment for the balance of its working population. These factories have to be properly located keeping in mind the future expansion of the city, the volume of production, noise, air-pollution and the traffic hazard these plants may create.

Generally speaking factories and homes are not good neighbours. However, if well designed industrial plants are planned with adequate open spaces around them and with proper arrangements of access for delivery of raw materials and shipment of finished products, they can be good neighbours.

The existence of the Delhi Slaughter House in Kasbpura area has been one of the major factors in creating blight-slum and unhealthy conditions in that section of the city. This industry alongwith all its ancillary trades, must be removed and better located some distance away from the urban core. Similarly Delhi Cloth Mills and other such industries should also be moved from their present locations on Bahadurgarh Road since they are surrounded by development on all sides and are a source of nuisance for the people living around them because of the air-pollution and the traffic hazards.

Adequate new site must be selected for a well planned industrial district and reserved for all such establishments. Provision should also be made for the future expansion of the industrial activity in such districts. The Industrial area on Najafgarh Road has not been properly located because the authorities then did not take into account, among other things, the prevailing wind direction. No further expansion of medium industries should be permitted in that area.

While there will be need for additional land for industry in Delhi, it is not possible to assess this demand for the next 20 to 30 years without conducting a thorough economic base study of our city. Such a study shall be undertaken as a part of the Long Range Comprehensive General Plan, which must follow the completion of this Interim General Plan.

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*Industrial Survey Report.
†Ibid.
‡Ibid.

The Interim General Plan has set aside enough land to meet the requirements of our community for the next five years or so and by that time the planners would be able to make some concrete recommendations for the future industrial programme of our Metropolis.

Business and Commercial Use

It is difficult to figure out the exact amount of land under retail business and general commercial use because of the dual use of the plot—residential, as well as commercial. Map No. 5 indicates in some detail how retail business and commercial office areas are distributed over the city.

(a) *Shopping Facilities*:

Our estimate of 580 acres is arrived at by establishing three or four standard depths of shopping frontages along the major commercial streets according to the type of shopping facilities these streets provide. The total acreage amounts to only 0·8 per cent. of the total incorporated area and 10·8 per cent. of the actual developed area. This works out to one acre of shopping for every 3,500 persons approximately. Even this one acre is not well provided for. This is further confirmed by chaotic traffic conditions that we see everyday in Chandni Chowk, Khari Baoli, Sadar Bazar, Chowri Bazar, Naya Bazar and Paharganj because of mixed speeds of traffic, use of pavements for shops, animals sleeping in the streets.

Some of the new markets built during the last few years have taken off some shopping load from Connaught Place but it still continues to be the only centre of activity for the entire New Delhi, West Delhi and South Delhi area, and functions as the down-town shopping centre of our Capital city.

The existing land use (Map No. 3) will indicate that there is need for three or perhaps more, of large shopping centres in southern and western parts of Delhi to meet the needs of the new suburban communities. The nature, type and size of such new shopping centres will depend upon the area and the population to be served by them. These new shopping centres will not seek to replace Connaught Place, but will function as perhaps three or four community shopping centres some distance away from Connaught Place, to serve the needs of the various areas. Additionally there will be space for banks, insurance companies and other commercial establishments.

Sites for these community shopping centre must be reserved at this interim stage before other non-conforming uses are developed at any of the sites. Such undesirable uses, if not forbidden now, may prevent the development of these new centres for ever. Further research on the economic base of our community will reveal how much land will be needed for business and how much for other commercial purposes to meet the ultimate needs of Delhi.

(b) *Wholesale Markets and Commercial Offices:*

There is also a great need for well-planned large wholesale markets in Delhi. Delhi has been, for the past several decades, a major distribution centre for the entire Northern India and this wholesale activity will continue to grow during the foreseeable future. This will demand additional floor space for storage of goods for outward distribution to other cities in Northern India. At present Chandni Chowk, Sadar Bazar, Khari Baoli, Naya Bazar and sections of Chowri Bazar are the wholesale distribution centres for different types of commodities. Goods are both received and shipped to other retail centres by rail and truck. The present street pattern is inadequate to handle the traffic generated by these markets. These markets will either have to be re-located somewhere else or the central core developed as the wholesale business, commercial and financial centre of the city and provided with good transportation network, ample parking, loading and unloading facilities.

Both of Delhi's grain markets are located on G.B. Road and were built to meet the needs of less than half the present population. There is no room for expansion of the present sites. Wheat and other food grains are stored on the side-walks under the blue sky. There is no provision for loading, unloading and off-street parking and thus a traffic bottleneck has been created at G.B. Road because trucks and animal-drawn vehicles are parked on both sides of the road all day long. Re-location of these grain markets is very necessary. Sites for these and additional markets, to cater for the present and future population shall have to be found where goods can be received from outside and sent to the distribution centres, without creating any traffic jams.

In the Interim General Plan recommendations have been made to redevelop the central area and to relocate the wholesale, commercial and financial centres of the city in two parts. Chandni Chowk and Khari Baoli areas are to be developed as the main commercial and financial centres and the Sadar Bazar area along Qutab Road to be the main wholesale market centre.

In the Interim General Plan both the business centres have been connected by an integrated transportation system, well served by roads and railways for goods delivery and shipment, forming a part of the proposed circulation pattern. It is also recommended that no vehicular traffic should be permitted into Chandni Chowk and that it should instead serve as a grand promenade for pedestrians only, opening out in the centre into the Queens Garden facing the Delhi Main Railway Station.

A. Residential land use

Land under residential use covers only 18·9 per cent. of the total incorporated area but forms 42 per cent. of the total developed area and is the largest single intensively developed use. Of these 13,270 acres, Government-owned housing covers 5,540 acres (42 per cent.) and private housing covers the remaining 58 per cent. Map No. 4 shows the distribution of government and private residential areas.

Until World War II, the Department of Public Works in the Ministry of Works, Housing and Supply was the major agency responsible for preparing plans and building houses for all Ministries of the Central Government. After Independence the demand of the Government Departments rose sharply and in spite of its hard efforts C.P.W.D. is not able to meet even a fraction of the demand. Hence several ministries have started developing housing colonies for their respective staff. The result is that Defence Colony for the Defence Ministry Personnel, Medical Enclave for the staff of the All India Institute of Medical Sciences, Railway Colony for the employees of the Ministry of Railways, Central Road Research Colony for the staff of the Central Road Research Institute, Radio Colony for employees of the All India Radio, etc., are being built in an effort to meet the needs of these ministries.

Although this programme has served to segregate people of different income groups thereby helping to ease the housing situation in the capital to a certain extent, it has not proved successful. A doctor residing in Medical Enclave may have as a neighbour the same doctor who is his colleague at the office. Similar situations may exist in the Defence Colony also. These new homogeneous neighbourhoods are socially undesirable as they tend to further widen the gap between people of different groups.

When New Delhi was built, Lutyens & Baker—British Architects, purposely segregated the orthodox and unorthodox clerks whereas Gole Dakhana (New Delhi Post Office) area was developed for unorthodox clerks. This policy continued to be followed during the last war and additional housing colonies were built on the same principles. Lodi Colony was developed for clerks only while Lodi Estate Bungalows were built for the senior Military Officers.

Post-independence development has not only followed this undesirable practice but also created further segregation on the basis of profession and departments. Viney Nagar has been built as another large town of clerks alone. Sewa Nagar is a colony of peons. Shan Nagar and Man Nagar are built for senior executive officers only. No effort has been made to integrate people of different income groups so as to help develop heterogeneous neighbourhoods making better social environments for community living. Indian society is already limited in its social contacts and it is only by living among the people from different areas and with different avocations that we can promote a better community life. A start in this direction could best be made by the Government since Central Government is the largest single land-lord and employer and the Estate Office is in a good position to take the initiative in this direction.

In addition to the government housing, both the State and the Union Government have given away large sums of money as loans and grants to encourage private house-building activity. Government have also developed large tracts of vacant land for housing, built dwellings and sold them to displaced persons from West Pakistan.

In spite of these efforts, housing shortage still exists and will continue to exist for several years in the absence of a well-conceived housing policy by the Government of India. The private developer has done a great deal in solving the housing problem. However, this has not had a major effect on the housing problem because there are too few houses and too many people still to be housed. This has resulted in doubling and tripling of families in small dwelling units which in turn tax the load on the public facilities and the municipal services. School sites become inadequate and double shifts have to be started to meet the needs of the community. Parks and playgrounds become too small for the number of people using them. Cost of maintenance increases whereas the revenue remains the same. Water pressure in the supply mains decreases and sewers start getting blocked because of the large volume of discharge due to this overcrowding in the dwelling units. Streets cease to carry the added volume of traffic and the entire circulation comes to a standstill. All this ultimately results in deterioration of the neighbourhood and its environment, and the community ceases to function as a healthy neighbourhood.

B. Residential Density

There is a great disparity of density patterns in our city. In places like Kaka Nagar the net density is as low as 40 persons per acre whereas in areas like Juma Masjid and Dariba Kalan the net density is 1,128 persons per acre. Such disparity must be removed and the population of Delhi be redistributed on the basis of an optimum density pattern. Additional land will be needed to house the surplus population from the high density areas.

To this surplus we may also add the projected additional population due to natural increase and migration. Analysing the density pattern of various cities in the world and also our new city at Chandigarh we have recommended a density pattern ranging from 35 to 200 persons per net acre.

All the 13,270 acres now under residential use will not necessarily be retained for the same use after redevelopment of the inner core. Those parts of the central area which have been earmarked for residential use, after redevelopment are proposed for higher densities ranging to 200 persons per net acre. On the basis of the recommended density pattern we have allocated additional vacant land for residential development and this should be ample to meet the needs of the community for the next 5 years or so. This is indicated on the Interim General Plan (Map No. 20). By that time the Comprehensive Plan would have been prepared to guide the future growth and development of the community.

C. Zoning

Zoning is one of the principal tools to control housing density, and prevent over-crowding in our dwelling units.

There are a few residential areas in our city which have maintained their original character ever since they were developed, because certain types of controls were enforced to prevent the encroachment of non-residential uses in these neighbourhoods. Such examples will be found only within the New Delhi Municipal area. We can compare the character of Gole Market, King Edward Road and Lodi Estate residential areas with those of Karol Bagh, Western Extension Area and Jawahar Nagar. The former three areas, where non-residential uses were not permitted to be encroached upon, have maintained their original character for which they were built. In the latter three cases, where there were no development controls, all kinds of commercial and industrial establishments have infested the entire community and we have a very high rate of road accidents, disease and deliquency. Every garage has become a shop. A tenant, who rents an apartment sublets the garage and recovers the entire rent of the dwelling unit by giving away that garage for commercial use. All this could have been avoided had there been any kind of zoning control when these areas were being developed. Proper zoning is one of the most valuable tools to protect our residential neighbourhoods and to prevent them from deterioration.

Educational Institutions

A. *Schools*:

In Delhi, as in the majority of our other cities in India, education is handled by several different agencies. Government Schools are run and maintained directly by the Directorate of Education, Delhi State. Municipal Schools are under the various Municipal and Notified Area Committees and the private schools are controlled by several sectarian and non-sectarian trusts and institutions. Only those private schools that are recognised by the Directorate of Education, Delhi State are included in this study.

There are hundreds of unrecognised private schools, which may be termed as "Shop Schools", that are run by various individuals and groups. There is no reliable information available about all such schools regarding their enrolment, location, structural stability, adequacy of the building and the site on which the building stands. Only a house-to-house survey can reveal the information needed about these schools.* Such a survey was beyond the scope of this study, but should form part of the detailed basic research for the preparation of the Comprehensive General Plan.

Delhi's total school enrolment had been increasing steadily upto 1948 and since then the increase has been more marked. In 1948, there were about 76,000 children enrolled in the recognised schools in Delhi State and in 1954 there were as many as 2,27,000.* This represents an increase of over 200 per cent. This abnormal increase, is greatly due to the influx of displaced persons into the capital from West Pakistan.

* Directorate of Education, Delhi State.

Reliable statistics are not available regarding enrolment in each of the primary, middle and high schools age groups prior to 1950. From 1950 to 1954, there was an increase of more than 50 per cent. in enrolment (1,47,534 to 2,26,907)*. Primary school age group showed an increase of 41 per cent. (41,388), middle school age group 95 per cent. (31,633) and high school enrolment increased by 49 per cent. (over 6,352). Our recommendations for future enrolment, therefore, are based on this five year period (1950-54) for which we have reliable data. Appendix I, Table No. 4 shows the enrolment in primary, middle and high schools for the year 1950-54.

Chart No. B shows the trend in enrolment since 1950 to 1954. These trends are projected further to show that the increase is likely to continue at the same rate, if not faster, for the next five years or so. This would require a large scale school building programme for the Directorate of Education, local Municipal bodies and private institutions concerned. Map No. 7 shows the distribution of boys, girls and co-educational schools for the three age groups in Delhi State. Educational institutions within the urban area of Delhi are shown on another Map No. 8.

There are only 745 schools in Delhi State catering for approximately 2,27,000 students.† During the period 1950-54 the number of schools within the incorporated area has increased from 303 to only 418 whereas the enrolment increased from 147,534 to 226,907 for the same period. This indicates that large number of the existing schools began operating on double and triple shifts as not enough new school buildings were built to cope with the fast growing demand of the community. During the same period the number of schools in the rural areas remained almost the same. Appendix I, Table No. 6 shows the growth in number of schools from 1941 to 1954 in Delhi State. It gives separate figures for urban and rural areas.

The three operating agencies responsible for school programme will have to step up their school building programme considerably to eliminate:

(a) double and triple shift system in the existing schools.

(b) to provide adequate number of new schools so that there will be a school within walking distance of every child.

In Delhi as in other parts of the country no child is required to attend the school in his own residential area. Some children travel several miles everyday to and from their school because they are not satisfied with the school in their own neighbourhood. This makes it difficult for the planner to work out the residential area that is served by any particular school. To establish a workable pattern for school attendance, as far as possible the child should be made to go to school in his own neighbourhood. The unserved pockets of residential areas could thus be determined and steps taken to provide new schools in those areas.

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* Directorate of Education, Delhi State.

† Ibid.

It should be the policy of the Government to licence all educational institutions and establish certain minimum standards so that the sub-standard schools are eliminated. Registration of such schools would give the planner a true picture of the school-age population and therefore of the actual number of schools needed for that population. This data will be all the more necessary when Government start implementing its policy of making primary school education available and compulsory for every child of that age group.

In the Interim General Plan no specific sites for academic or technical schools are indicated but adequate land for such facilities shall have to be reserved, while preparing detailed layout plans for the various areas in Delhi.

B. *Vocational and Technical Schools*:

For imparting vocational training in various trends, the Regional Directorate of Resettlement and Employment, Ministry of Labour, Government of India has set up the following four training centres:—

1. Industrial Training Centre, Delhi Polytechnic, Kashmere Gate.
2. Industrial Training Institute, Karol Bagh.
3. Industrial Training Institute, Bela Road.
4. Industrial Training Institute for Women, Curzon Road.

The Ministry of Rehabilitation have also established a training institute at Arab-ki-Sarai, which imparts technical training on commercial basis to displaced persons only.

It was not possible at this stage to give any thought to such schools regarding their location, adequacy of the site and the buildings they are located in. A complete inventory of all technical and vocational schools in Delhi is necessary before any tangible recommendations can be made for the technical education programme. Such survey should be taken up during the Comprehensive Plan stage.

C. *Colleges*:

The University of Delhi was founded in 1922 to cater to the needs of the community for college education and post-graduate studies both in the arts and sciences. Prior to 1947 the University had plans to centralise college education system and locate all the degree colleges on the University Campus. The intention was to develop this University as a residential institution comparable to University campuses in the United States. But with the influx of displaced persons from West Pakistan and the resultant abnormal increase in the college age group, the University could not carry out that plan. In addition to the large number of students desiring admission there were other reasons also why the original plan could not be implemented. There was no further space available on the University Campus and because Delhi had mushroomed out to the south and south-west of the city, some colleges had to be located closer to the new residential areas.

Table No. 5 shows the trends in students enrolment at the college age group for the past six years. This is represented graphically in Chart No. . The same trend is likely to continue for the next 5 or 10 years. It is very undesirable to locate new colleges in a haphazard fashion. Proper site for a secondary campus should be selected in the southern parts of the city which could be developed in stages based on a long range and planned programme. Such a site should be in close proximity to the new residential areas.

The present campus may retain the existing under-graduate colleges but all available vacant land should be reserved for locating other post-graduate schools and other advanced institutions.

The land now under Defence control immediately north of the present campus is most suitable for expansion of the University activities. This would provide enough land for locating all post-graduate schools. School of Town and Country Planning, School of Public Administration, etc., having organic relation with other schools already located on the campus could also be set up there so that students of these and other such schools can take advantage of the campus facilities. These two schools at present have been allotted small sites in Inderprastha Estate.

D. *Other Research Institutions*:

The following national research institutions are also located in Delhi:—

1. Council of Scientific and Industrial Research.
2. Indian Agricultural Research Institute.
3. The Central College of Agriculture.
4. Sri Ram Institute.
5. Indian Standards Institution.
6. The National Physical Laboratory.
7. Central Road Research Institute.
8. All India Institute of Medical Sciences.

These institutes provide opportunities for advanced research in the fields of science and technology. Plans are under way for building the Central College of Agriculture. This Organisation in consultation with the University of Delhi has suggested two possible locations for it. During the past few months it was not possible to go into the details of these institutions regarding location, adequacy of land, etc. While preparing the Comprehensive General Plan it will be necessary to have a complete survey of all such institutions of national importance.

Recreational Areas

There are only about 1,500 acres of land available for public and semi-public recreation in our city. This forms only 2:1 per cent. of the total incorporated area and 4:7 per cent. of the actual developed area in Delhi. Parks, Open Spaces, Playgrounds, Play fields and

public stadiums cover about 1,300 acres open for public recreation while the remaining 200 acres or so belong to private clubs. Map No. 9 shows in addition to the location of Historical Monuments. the major parks and open spaces in the city.

The above data indicate that we have roughly one acre of open space for every 1,200 persons. This is an extremely low ratio when compared to the bare minimum standards for parks and recreation, let alone an ideal recreation system. Chandigarh for example, has provided approximately 4 acres for parks and open spaces for every 1,000 persons whereas we have 4 acres for nearly 5,000 persons.

In some places new buildings are built in the parks or on other open spaces to avoid the problem of land acquisition and rehousing. Government should instead have acquired some of the slums and blighted areas of the city and developed new parks in those areas thereby reducing the problem of slum clearance instead of aggravating it. We are short of open spaces in many densely built-up areas where it is badly needed. Even such open spaces that we have are encroached upon by gas stations and other such structures.

The new existing parks and recreation areas are badly needed for the existence of our community and must be preserved at all costs. Karol Bagh, for example, has virtually no major open space other than the Ajmal Khan Park which is extremely overcrowded everyday by masses of people looking for breathing space in that densely built-up area. Western Extension Area lacks the same facility. A few small plots have been left as open spaces, under the name of public parks. These odd bits are dangerous and create traffic hazards since they primarily function as traffic islands. Children have to cross the vehicular traffic to reach these miniature parks. Pusa Institute gardens are being used by the Patel Nagar residents as the major park because there is no large open space provided in the area.

Delhi has a private 18 hole Golf Course and a Race Course. The race course is inadequate to serve the needs of the growing population and needs to be re-located. There appears to be need for another Golf Course. At present there is no public swimming pool. Plans are underway to build one in Queen's Garden opposite the main Railway Station. It is only very recently that steps have been taken for the establishment of a Zoological Park in Delhi, a facility which was needed for the citizens of the capital several decades ago. It is questionable whether the site selected for the purpose is desirable and adequate.

About 2,500 acres of the ridge are reserved as permanent open space and this is extensively used by the people living nearby. Streams of people come to the ridge every morning for a stroll. This open wedge in the heart of the city and its northern link east of the University campus must be maintained as a permanent physical feature of our city. No further encroachment of buildings should be permitted on this ridge since this is the only major breathing space left near the heart of the city.

While working out our proposals for major parks and recreation areas this wedge has been connected with our proposed regional park system so as to link the internal open space with the regional park areas to integrate the two to form a continuous belt all around the city.

The Interim General Plan shows only the major recreation areas required in the various parts of the city. A new site for re-locating the race course near Nizamuddin Railway Station has been indicated on this Plan. A second golf course is also recommended to be developed in the north near Princess Road. This will be a multi-purpose recreation area having lot of playgrounds, etc. and joins the big park near the Coronation Pillar. University students will also be benefited by this new park since they don't have adequate recreation areas.

It is also proposed to develop the river front for various kinds of recreation activities. Fortunately not much development has taken place near the banks of the river except in Kashmere Gate Area. The entire water front should be developed for recreational purposes, and sections between Wazirabad and Khyber Pass and between Red Fort and Humayan's Tomb, should be developed more intensively for public recreation such as playgrounds, swimming pools, fishing areas, bathing ghats, beaches, etc. Some thought should be given to the possibility of developing the flow of the river and building a dam across it which would serve many purposes at one time. The lake behind the dam would maintain an even level of water throughout the year and would also control the river during the monsoon season.

In addition, provision will have to be made for several local neighbourhood and community parks while preparing the detailed layout plans for the various sections of the city.

Other Community Facilities

A. *Medical Facilities*:

With the abnormal growth of Delhi's population immediately after Independence, the demand for medical facilities also grew considerably. The existing hospitals, health centres, dispensaries—both ayurvedic and allopathic, child welfare and maternity centres proved to be inadequate to serve this large population. Recently the Ministry of Health have introduced the "Contributory Health Scheme" and this has increased the load on the existing facilities.

Some new dispensaries have been built under the C.H.S. Scheme but there appears to be no rational basis for their location. Wherever a room was available within reasonable proximity of a residential area, a dispensary was opened. Chandni Chowk Child Welfare and Maternity Centre, for example, is a poor dispensary because of its insanitary condition, structurally unsound building and inadequate site. This should have been one of the finest centres since it is located in the heart of the city. It is also true of those dispensaries located in Juma Masjid, Lal Kuan, Nai Sarak, Pahar Ganj and Phatak Habash Khan areas. Only in some of the new residential

areas are these facilities housed in better and cleaner buildings, even though those buildings were not designed as such for medical uses. The new hospital and dispensary under construction at Lajpat Nagar may be sited as one of the very few examples where attempt has been made to locate it on a proper site to perform the functions more effectively.

The Delhi State Health Department and the Local Bodies also maintain several kinds of health centres. These may be classified under three heads:

(a) Child and Maternity Welfare Centre without beds.

(b) Child and Maternity Welfare Centre with beds.

(c) Child and Maternity Welfare and General Health Centre with beds.

Under the first two categories maternity beds are provided only for those patients who do not have enough accommodation within their own houses. A nominal fee is charged from each patient.

Centres in the third category act as small general hospitals and also have few beds. Medical treatment for minor diseases is given in these centres. Map No. 10 shows the distribution of various types of medical facilities available in Delhi. Appendix, 1, Table No. 7 lists the location of these facilities in Delhi.

It was not possible to investigate the adequacy or otherwise of health facilities at this stage. In the Comprehensive Plan stage detailed surveys should be undertaken to assess the present situation and the standards for health centres should be developed and a programme to implement these standards to be set up.

B. Police Stations:

Police authorities have divided Delhi State into three different circles:

(a) New Delhi.

(b) Delhi City.

(c) Delhi Rural.

Within each circle there are several police stations and each police station controls two or more police posts. Appendix I, Table No. 8 lists the location of these various police stations and police posts within our urban area. These are also shown on Drawing No. 10 titled "Community Facilities."

There are at present 18 police stations in Delhi. After the completion of the Second Five Year Plan, Delhi will have 11 more police posts, as recommended by the police authorities.

The size and location of these additional facilities should be worked out only after a careful study of the existing and proposed residential areas in order to avoid overlap and duplication in some areas and lack of coverage in others.

C. Fire Stations:

Delhi has only 7 fire stations to serve the entire urban community. Four of them are located in New Delhi, two in Old Delhi and one in Shahdara.

Map No. 10 shows the location of these fire stations in Delhi. Further study for the adequacy of fire protection is necessary before any detailed recommendations as to location and size of fire station can be made. It is recommended that such studies be undertaken as part of the comprehensive general plan keeping in mind the urgent necessity of providing fire protection to residential, commercial and industrial areas of the city.

D. Post and Telegraph Offices.

Postal authorities have divided the urban area of Delhi State into 19 zones. There are two General Post Office int Delhi—one is Gole Dakhana (New Delhi Post Office) and the other at Kashmere Gate in Old Delhi. There are 98 branch post offices in these 19 zones. Appendix I, Table No. 9 gives the name of the area, the zone number and the number of post offices, with their addresses, in that particular area of the city. Map No. 10 shows the distribution of these post offices in Delhi.

New locations for all additional post and telegraph offices should be decided upon while preparing the detailed layout plans for various sections of the city since such details could not be shown in the Interim General Plan.

Summary

To Summarise:

1. There are large areas of undeveloped land within the corporate limits of the eight Municipal and Notified Area Committees.
2. The density of population in residential areas ranged from very high to very low. A more balanced density pattern needs to be worked out.
3. There is a lack of adequate shopping facilities to serve the new residential neighbourhoods that have developed. New shopping centres should be developed in relation to the new existing and proposed residential areas.
4. There is a tremendous mixture of incompatible and undesirable land uses within the city. The slaughter house and the cattle sheds should be removed from the heart of the city and re-located outside. Large areas in the Old City need to be redeveloped and most economical and desirable land uses should be proposed.
5. Any future extension of the industrial area on Najafgarh Road should be properly planned in relation to the fast growing residential areas immediately adjacent to the industrial area.
6. Textile industries and other medium industries are at present mixed with residential areas. These should be removed from their present locations to the new planned industrial districts. Similarly Gwalior Potteries and other smaller Potteries now in the vicinity of Vinay Nagar should also be re-located.

7. There is lack of office accommodation in Delhi both Government and Private and as a result many offices have been established in residential areas.

8. Almost all available land under the control of the Delhi University has been developed. More land is needed for expansion of educational and housing facilities. Possibility of acquiring land now under Defence immediately north of the University Campus should be investigated. Delhi has grown much larger than it was anticipated. Some reconsideration of the original plan of the University seems warranted. Possibility of a southern campus for under-graduate colleges should be investigated.

9. North west part of Delhi has good fertile agricultural land with a network of canals. Any intensive development towards this side should be discouraged.

10. City is blessed with some nice fruit gardens in the North West and a green wedge of the ridge running right through the heart of the city. Both these areas should be preserved and developed for recreational purposes.

11. Ministry of Defence controls large areas of land in Delhi State. All land use proposals should be properly coordinated between civil and defence authorities to avoid the development of any conflicting and undesirable uses.

12. Jumna River front has been lying undeveloped. A beautiful park should be developed and incorporated in the proposed national park system all along the river front for public recreation, before this vacant land is infested by any intensive use. This could join in the north with the new proposed golf course and major recreation park to form a well planned integrated programme for recreation.

Chapter IV

POPULATION

I. Trend, existing structure and composition

In 1891* the population in Delhi District was 3,73,136; in 1901 it was 4,05,819.** In these ten years the population increased by nine per cent., but in the succeeding ten years the increase was only 2 per cent. which was markedly low in comparison with the rates during the previous decades or in the succeeding few decades. There seems to have been nothing abnormal in the rates of growth of population from 1931 to 1941. But 1951 figures have shot up to almost double that of 1941. This shooting up has been obviously due to the influx of refugees due to the partition in 1947. The population today (August 1956) in Delhi State is estimated to be nearly 21 lakhs.

In order to make a comparative study of the trends of population between the rural and the urban areas, it was necessary to have the village-wise population for the past few decades. But the population figures for the various villages prior to 1951 were not available, from any source, for ready reference in any systematic form. The population figures for the various villages since 1911 were collected from the Urdu records kept with the individual patwaris.

These population figures are graphically plotted for comprehensive analysis of the differing trends in the various places.***.

During the period 1911 to 1951 the population of the State increased by over 13 lakhs. During this period the increase in population in rural and urban areas are over 1 lakh and 12 lakhs respectively. More than 90 per cent. of the total increase is thus explained by the urban area alone. The increase of the population of the State during the years 1911—1941 is only about 5 lakhs. The corresponding increase during 1941—1951 is more than 8 lakhs. Out of 13 lakhs of increase in population during these forty years more than 60 per cent. occurred during the years 1941—1951. It is also clear that the influx of refugees was mostly confined to the urban areas only.

It is also noted that the trend is very low for the villages on the eastern bank of Jumna. This may mainly be due to the fact that they are flooded every year.

In the south of Delhi State, again, the trend is low and this may be attributed to the fact that the land there being predominantly rocky would not have attracted settlers.

In the north-west of Delhi, the trend is seen rising, may be because land there is the most fertile in Delhi State.

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*The first scientific census for India was attempted in 1891 and there is no record available to show accurately what the population figures were in Delhi prior to 1891.

**Source Census of India, 1951.

***See Map No. 14

Certain particular villages near the urban core show considerable increase in population whereas certain others have shown decrease. The reasons for this are not quite apparent. It is necessary to explore in detail the sociological and economic reasons that were responsible for such variations in the different localities, before any final proposals for land use could be presented. This type of study will be undertaken during the preparation of the Comprehensive Master Plan.

Map No. 13 indicates the population distribution based on 1951 census, over the whole of Delhi State, showing also the proportion of agricultural to non-agricultural population. Unlike other States of Indian Union, where the population is predominantly rural in character, Delhi State is primarily urban where 82 per cent. of the people live in urban areas. This statement is further emphasised by the fact that while the percentage of the total population of Indian Union engaged in agriculture is 72 per cent. in Delhi State this percentage is only 10. Out of 3,06,938 persons living in rural areas only 52 per cent. have agriculture as their occupation. Out of 14,37,134 persons living in urban areas, only 0·9 per cent. have agriculture as their occupation.

Map No. 12 gives the distribution of population in the urban centre giving an idea of the approximate density in different wards, as of today. A table showing the densities in the various localities is also appended.*

The city of Old Delhi is more crowded than New Delhi. The most densely populated area is Jumma Masjid Dareeba. Here the density is as high as 1,128 persons per acre. The next is Sohanganj with a density of 900 persons per acre. Mori Gate, Maliwara, Ballimaran, Kalan Masjid, Kucha Pati Ram, Chatta Lalmian, Bara Hindu Rao, Paharganj and Old Gurgaon Road have densities over 500 persons per acre. Pusa Road and Kishenganj have the lowest densities (124 and 157 persons per acre).

The net densities in the recently developed areas vary from 40·72 to 371·82 persons per acre. The lowest density is Kakanagar (40·72 persons per acre) and the highest density area is Vijay Nagar (371·82 persons per acre). Ramesh Nagar is designed for a density of 306.34 persons per acre. It is also quite high when compared with the densities of other colonies which vary from 70 to 200 persons per acre. The following table shows the density figures for the various units of the State:

	Density per sq. mile
1. Delhi State	3017
2. Delhi Rural	613
3. Delhi Urban†	11664
4. Delhi City	136536
5. New Delhi City	8419

The density of cultivated area is 500·5.

*See Appendix II—Part II

†Delhi urban comes under Delhi Municipal Committee, New Delhi Municipal Committee and Notified Areas.

Since our first concern is to provide all citizens proper living environment, the structure of our population is also as important as its size. We have, therefore, indicated the age-sex pyramid of the population of Delhi in 1951 and also the occupational composition. There is no special feature to mention about the age-sex pyramids of Delhi in comparison with that of the country as a whole.*

Projections for the age-sex composition are also made out to get a rough idea of the future composition.†

The break-up of the population on broad occupational basis is illustrated on Chart.

The largest segment of the population of Delhi (44·6 per cent.) is dependent on miscellaneous occupations including Government service. The next large size, 22·6 per cent. is dependent on commerce. The next large size, 17·3 per cent. is depending on production other than cultivation. People depending on agriculture is only 10 per cent. The balance 5·5 per cent. of the people is dependent on transport.

The number of Government employees in 1951 was just below 1 lakh out of a total population of 17,44,072.

The break-up of the Government Employees:

(i) Union Government	87,559	5·0%
(ii) State Government	11,839	0·7%
(iii) Local Government	10,639	0·6%
Factory Employees (1956)	35,709	2·0%

Now nearly 6·25 lakhs of people are depending on Government employment, covering Union Government, State Government and Local Government. There are no accurate figures available yet for knowing the exact composition of the unemployed total population. It is expected that the National Sample Survey would reveal such statistics in the near future. An interesting extract is also added from the National Sample Survey No. 4, Special Report of personnels in the Live Register of the Delhi Employment Exchange to give an idea of the nature of qualified unemployed people in the State.‡

II. Deductions

The variations of population for the rural and urban areas during the past several decades seem to have been almost inversely proportional to the areas covered by these two types of land which are 501 sq. miles and 79 sq. miles respectively. When the percentage variations maintained almost a steady progression through the several decades, say 1891 to 1941, in the urban areas (8, 12, 31, 47 and 55) the variations in the rural areas have gone down since 1911 to 1941. The corresponding figures are 9, 8, 2, 3 and 18. See table on next page.

*See Charts E. & F.

†See Appendix II—Part VII

‡See Appendix II—Part III

Percentage variation of Delhi State Population 1891—1951

	1901	1911	1921	1931	1941	1951
1. Delhi Rural.	9	8	2	3	18	38
2. Delhi Urban.	8	12	3	47	55	107
3. Delhi Total.	9	3	13	29	43	91

The table indicates the impact of the development of New Delhi, the urban centre on the rural surroundings; and how large percentages of rural populations have been gravitating into the urban area since 1911.

Immediately after New Delhi was established as the Capital, *i.e.*, 1911 onwards the rural-urban migration would have been maximum causing the variation in the rural areas come down to 2 & 3 from 9 & 8. It is only natural that after sometime this migration would have reached a reasonable rate and hence we notice the variation since 1931 to be somewhat steady giving the figures 18, 36 and so on.

The variation between 1941 and 1951 has been unprecedented due to partition. The variation over Old Delhi during this decade was over 90 per cent. But the variation over the urban area was 107 per cent. and that over rural area only 38 per cent. This brings out vividly the reasons for the uncontrolled and unpredictable overcrowding that has been taking place in the urban region in wide contrast with what happened over the rural tract.

What do these studies lead to?

Perhaps situations similar to those raised by partition may not arise again. But the factors that were responsible for the disparity in the population trends between urban and rural areas since 1911 still remain.

III. Population projections

What will be the trend in the course of the next 20 or 30 years? The answer to this question is fundamental to nearly every aspect of our plan for it governs the scale of provisions required to meet the future needs in respect of schools, play-fields, transport and housing. Therefore the future population projections have also been attempted upto 1971 according to the different known techniques of projection. Projections have also been made for the livelihood categories on the basis of the data available of 1951 and previous years.*

The estimates vary from 29·7 lakhs to 35·85 lakhs for the year 1971.

The average birth rate for the second quarter of 1955 was 23·6 per thousand as compared to 20·7 for the corresponding quarter of 1954, thereby indicating an increase of 2·9 per thousand persons. As regards death rate, this has also increased to 9·7 per thousand persons for the second quarter of 1955 as compared to 9·5 for the corresponding quarter of 1954. The increase in death rate is thus very in-

*Please see Appendix II Parts V-A and V-B.

significant when compared to the increase in birth rate. The growth potential in the State is high on two accounts. Firstly, the basic population is large and secondly a reduction of death rate without a corresponding decline in the birth rate is highly probable. Mortality has been and can be further reduced by a few simple measures, such as improvement of sanitary conditions, availability of health services and nutrition, better transportation and distribution facilities. Reducing the birth rate, however, is a much more complex matter involving radical adjustment in social outlook which hitherto has been resistant to change.

The Interim General Plan does not lay down any definite target for population because it is intended to serve as an interim physical development guide during the Master Plan preparation period.

IV. Population redistribution and recommendations

Having aimed at the population projected over the span of time considered for planning, in this case 1971, it becomes essential to indicate the manner in which this population will be, or is desired to be, redistributed within the planning area. The purpose of the entire process of planning, the researches, studies and techniques of design is to enable the experts to give this indication on a Map, namely as to how the projected population will be and can possibly be redistributed over the planning area. All the proposals whether for land use, circulation or for neighbourhoods will have to serve this redistribution.

If planning should bear any lasting meaning or should offer radical remedies for the evils of city life, we are witnessing today, such as slums, over-crowding, traffic jams, accidents, etc., it is imperative that we should prevent all conditions which induce the rural people to migrate to urban centres. This will be possible only by purposefully and boldly employing the techniques of Town and Country Planning. In case comprehensive town and country planning had existed from earlier days, the impact of the influx of refugees would have been distributed equitably over the whole State, instead of all of it coming on the urban core and a balance could be set up between the rural and urban economies.

The approach to planning adopted for Delhi, will naturally be looked upto by the rest of the country for a lead in planning policies, planning to preserve the peaceful nature of the village life in India and to build up a balance between the urban and rural economies of the country. It needs a technique which can prevent the inordinate expansion of city limits and at the same time to control the migratory trend of the rural population into the urban centres. It would be ideal if these techniques can be demonstrated in practice by the Planning in Greater Delhi. It is possible since the entire Delhi State is centrally administered and since there is nothing to prevent the vast unbuilt rural expanse within Delhi State being studied along with the urban core as one planning unit for population redistribution.

Dispersal of industrial, commercial and work centres from the existing crowded centres of cities and re-locating them in the neighbourhoods, has become an accepted philosophy in modern planning, particularly in planning for Slum Clearance and prevention of slum conditions. The choice of the nucleii for re-location of industries, Commercial Centres, etc. will have to be going along with the plan for the prevention of the migratory trend from the rural areas to urban centres.

(The proposal already put up for re-location of all slaughter houses along with ancillary trades using the land in a village (Nangloi Saidan) in the outskirts of the urban core is an example to show how this principle can be implemented for the advantage of the people.)

This process is linked vitally with the study of employment potentialities and possibilities, of physical and industrial development in the various areas, as well as with the study of the different conditions that are responsible for the rural-urban migration.

The researches involved herein are essentially of a socio-economic nature and before the Town Planning Organisation could put up any valid proposals for redistribution of population it is necessary that a thorough socio-economic survey is made. In this connection it is encouraging to note that the Delhi School of Economics, at the instance of the Central Research Programme Committee of the Planning Commission, have launched on a very thorough going socio-economic survey for Greater Delhi. The results of this survey will supply all the important information that will be needed by planners. This survey, it is learnt, will be completed in another one or two years' time. The Town Planning Organisation will utilize the results of their survey of the different localities as and when they are completed. The following is an extract from the background literature of the Greater Delhi Socio-Economic Survey of the Delhi School of Economics, which would indicate the very valuable information that this survey will give to Planners for shaping their proposals and designs for future land uses.

In addition to this socio-economic survey which is being done by the Delhi School of Economics, it is also necessary to have a particular research into the economic base of the community.

Chapter V

CIRCULATION

Circulation system consists of roads and highways and transportation for the movement of people and goods from one place to another with minimum conflict and friction.

Roads and Highways

Roads and highways are the transportation facilities that serve to move people and goods, and as such are of vital necessity in the economic life of a city or metropolitan area.

In Delhi the road system has to cater to various types and speeds of traffic such as, cycles, animal-drawn vehicles, cars, buses and trucks with convenience and safety. Therefore roads should be wide enough for achieving traffic mobility. Thought should be given for segregating slow, fast and animal-drawn vehicles and provide adequate grades and curves on roads.

The existing roads and highway network in Delhi is inadequate for today's traffic load and will certainty be grossly inadequate for the future traffic needs.

The road system in urban Delhi lacks the functional classification of roads and much of the [traffic] congestion and hazards on these roads has come from trying to make the same roads do too many jobs at once. To have an orderly flow of traffic the system must have collector streets to collect traffic from major localities and distribute on to major thoroughfares, which in turn channelize the traffic to the major arterials of the city.

There are many reasons for inadequacies in Delhi's road system, but generally there has been a lack of co-ordination among the agencies concerned and the absence of an overall comprehensive roads and highway plan for the entire Delhi.

When New Delhi was created it was planned as a separate entity with the result there was no integration of road system between Old and New Delhi. Moreover the circulation plan of the new city lacked flexibility as there is no room for adjustment. Of course no one could have anticipated the influx that expanded the city almost overnight. Nevertheless under the pressure generated by the refugees many *ad hoc* decisions were taken and these have resulted in the conditions that exist today. The major traffic movement in Delhi is from the North, West and South direction and yet there are no thoroughfares connecting these areas to work centres. Consequently the traffic leading to and from the Secretariat has to pass through either residential areas or the busy commercial centres, adding hopelessly to the already existing congestion.

An adequate road system should seek to separate traffic by function, so that residential roads carry only residential traffic, being so designed that through traffic is discouraged. Through traffic having no business in Connaught Place should be provided with traffic ways to by pass it.

Keeping these ends in view, some of the defects in the road system in Delhi have been pointed as follows:

1. There is a mixture of all forms of traffic on practically every road. Though certain roads are more important traffic routes than others, the distinctions according to function are not sharp enough.
2. Most of the main roads in Delhi are not wide enough to take care of the present traffic volume, particularly bad examples are Faiz Road, Shankar Road and Delhi-Mathura Road.
3. Major roads which carry through traffic should have limited access to them. but in Delhi intersections occur at too frequent intervals on main roads, tending to slow down through traffic, and proving sources of danger.
4. At important intersections, no storage lanes for turning movement are provided. Thus vehicles which are making a right turn block traffic behind them.
5. Housing and shopping in the form of ribbon development along Najafgarh and Qutab Road is bad since local traffic interferes with through traffic.

We must therefore develop a circulation system for Delhi, which will provide for the safe, convenient and efficient movement of people and goods, not only to meet today's traffic load but also future loads as they develop.

Traffic:

As mentioned earlier, the traffic in Delhi is of heterogeneous nature. Fast and slow moving vehicles use the same carriageways, as there is no provision for segregating them. This had led to confusion and obstruction to an orderly traffic flow, due to the slow-moving vehicles not yielding right-of-way to faster vehicles.

The traffic problem is further aggravated during the morning and evening peak hours, when due to the simultaneous movement of a large segment of the city's population to and from work, almost every road is congested in Delhi. This again is due to the fact that there is no proper system of roads to distribute the traffic, with the result that it dribbles out on every road and congests them.

The conditions are chaotic at intersections in spite of police and traffic signal control. This jam-up at intersections is caused by the turning movement of vehicles which could be alleviated by providing storage lanes. Vehicles clogging at intersections can be reduced by channelisation, *i.e.*, by building storage lanes for cars waiting to turn. On important streets a right turn storage lane should be constructed with concrete channels to permit straight-ahead and left-turn traffic to proceed without interruption from right-turning vehicles. Traffic congestion at intersection can also be alleviated by segregating the slow and fast moving traffic.

There is no clear separation of pedestrians from traffic. In many places side walks are monopolised either by vehicles or hawkers, with the result pedestrians use the carriageway thereby impeding the flow of traffic.

Pedestrians experience great difficulties in crossing roads, because at important intersections, pedestrians and vehicles are contending for restricted space in restricted time. Each vehicle, each pedestrian wants to go on. This competition is intensified by vehicle-turning movements and curb-parking. At such intersections merely police control is not enough, but a 'walk-wait' signal system should be installed. In this system pedestrians can cross in any direction and even diagonally across the intersection, while all the vehicles wait.

The traffic conditions in Delhi to-day are bad enough. Imagine what they will be like in the future with our ever-growing population and increasing vehicular traffic. Figures obtained from Delhi State Transport Department indicate that motor vehicles increased by about 6,000 in the last five years. Whereas the number of cycles show a phenomenal rise from about a lakh in 1952 to almost over two lakhs in 1955.*

So in order to alleviate the chaotic traffic conditions on roads, and clogging at intersections adequate control measures and traffic regulatory devices should be employed immediately to allow for the efficient flow of traffic without accidents, and for the pedestrians to walk with confidence.

This can be done by improving the facilities already available. Street widening and building new roads which involve high expenditures ought to be considered at a later stage.

Full capacity from present facilities can be extracted by improved traffic routing, intelligent traffic regulations from the point of view of speed, turning movements and parking and loading. Accessory devices, such as traffic signals, stop signs with adequate design and placement also help to control traffic. Street lighting should be improved, and vehicles, particularly cycles, should be made to carry both head and tail lights to facilitate night driving.

Traffic police should be well-versed regarding traffic rules, so that enforcement of law observance becomes feasible. Last but not the least is the safety education among both drivers and pedestrians.

Cycle Traffic:

The cycle traffic in Delhi is a major problem by itself, regardless of its impact on other vehicular traffic.

Studies conducted by Central Road Research Institute reveal that cycles constitute nearly 65 per cent. of the total traffic volume in Delhi. The total number of cycles registered in Delhi to-day is about 1,25,000 but estimates of the actual number of cycles on road run as high as two lakhs, since a substantial number of them are not registered.

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*See Chart—II

During the peak hours, there is a great volume of cycle traffic moving towards the Central Secretariat area. Most of this traffic flows along certain roads and because of the lack of segregation impedes and blocks fast-moving vehicular traffic, which in turn creates hazardous conditions for the cyclists themselves resulting in increased rate of accidents. Nearly 30 per cent. of the total accidents on carriageways and at intersections are due to cyclists.* Analysis of accidents records from 1945 to 1954 for some of the major cities with large volume of cycle traffic show a sharp rise in the rate of accidents with the increase in the number of vehicles.**

In a few areas cycle tracks have been provided in an attempt to separate cycle traffic from fast-moving vehicles, but the effort has not been very successful, as they are not wide enough to carry the volume and secondly because of the interference of pedestrian movement, which hampers the traffic flow. This results in the cyclists using the carriageway along with motor vehicles and animal-drawn traffic.

The capacity of the traffic lane is reduced because of the mixture of slow and fast-moving vehicles and inadequate road widths. Therefore steps should be taken to improve the circulation of cycle traffic on existing roads and those in new colonies under construction in Delhi.

Roads should be widened where necessary and some attempt should be made at segregating slow and fast traffic. Cyclists should be provided with a separate route altogether which ought to be direct and wide enough to carry the volume of cycles.

Origin and destination surveys and other studies of cycle traffic in Delhi are essential before any tangible recommendations can be made. Shankar Road and Panchkuin Road are at present used by the cyclists going to and coming from Central Secretariat during the peak hours. The cyclists have to compete with the animal-driven and fast-moving vehicles on the road and some of them have to pass through the central business area of the city. These routes are not necessarily direct to Central Secretariat, and therefore cause a certain amount of delay for the cyclists. Further, the volume of cycle traffic is so heavy that it interfers with the flow of vehicular traffic often resulting in accidents. Therefore a more direct route leading to the Central Secretariat must be found, solely for the cyclists and no other traffic on this route should be allowed during peak hours, and it should be made one-way; towards Secretariat in the morning and from the Secretariat in the evening.

The Central Road Research Institute has conducted studies on cycle traffic which are listed under four headings:

1. The influence of inequalities in the surface of cycle tracks and enforcement on the cyclists behaviour.

The surfacing of cycle tracks must be of a quality equal to, or perfectly superior to that of the adjoining roadway, which

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* From a study made by the Central Road Research Institute, New Delhi.

** Ibid.

later is to be relieved by the cycle tracks; otherwise it may prove difficult or even impossible to interest the cyclists to use the cycle tracks and to keep them away from the roadway proper. Observations made on cycle tracks of different width in New Delhi have shown 85 per cent. to 95 per cent. of the cyclists will use the cycle tracks of good riding qualities and when there is enforcement during peak hours by traffic police.

2. (a) Determination of basic and working capacities of cycle tracks.

Observation on 12'-0" cycle tracks give a basic capacity of 4,500 cyclists per hour and working capacity of 3,200 cyclists per hour. Capacities for 9'-0" and 6'-0" cycle tracks are being investigated.

(b) The effect of major and minor intersections, access to houses and pedestrians on the capacity of cycle tracks.

3. Determination of gradients which could be adopted for limited and unlimited lengths of cycle tracks.

4. Investigations on volume of cyclists and other vehicular traffic which would justify the provision of separate cycle tracks.

Traffic Accidents

Statistical data on accidents obtained from the Delhi Traffic Police Department reveals that the total number of accidents in urban Delhi increased from 281 in 1948 to about 1,100 in 1955*. This is directly related to the increase in the total number of vehicles in Delhi—from 16,728 in 1948 to 1,51,534 in 1953.*

The greatest percentage of accidents during the past three years, as recorded by the Traffic Police Department was due to rash and negligent driving. Though the term rash and negligent driving needs further definition, yet it appears that most of the drivers in Delhi pay no respect to any traffic rules and regulations.

Almost every accident of any consequence involves at least one traffic law violation. Strict enforcement of traffic laws, such as speed limits, signalling, right-of-ways, overtaking, etc. is necessary to prevent traffic accidents.

Accident records obtained from Delhi Traffic Police Department are far from perfect. Particulars about accidents are not satisfactorily reported, and many are not reported at all. Lack of knowledge of thoroughness, or of attention by the recorder may also result in failure to record causative factors. As regards unsafe speed and other traffic violations, evidence may often be lacking or remain unnoticed.

Thorough accident studies are essential. Accident data are the customary basis of a selective enforcement programme designed to reduce accidents. They are also important when decisions are to be made respecting the use of traffic control devices, the improvement of street lighting, the determination of through streets and special routes. Studies should be made of the location and times of accidents and of wrong practices involved. The worst accident locations

*See Chart—I.

(mainly inter-sections in the city) should be studied by means of collision diagrams and field observations. Such studies result in remedies which reduce the toll by large percentage.

Parking

While the problem of parking is not so acute as in other cities, yet there are few places in Delhi where there is enough parking facility. At important shopping and business centres such as Connaught Place, where parking facilities are most called for, there is insufficient parking space. During peak hours it is quite common to see automobiles, taxis, motor-rickshaws and cycles overcrowding the side-walks and monopolising them as parking spaces.

In the busy commercial areas of Chandni Chowk and Sadar Bazar where trams ply on either side of the streets, automobiles, thelas and carts are double parked on both sides throughout the day, impeding the through flow of traffic.

In the wholesale business areas of Delhi, entire streets are utilised for parking trucks and carts, blocking entrances to lanes and causing traffic bottleneck.

The various municipal taxi and auto-rickshaw stands are inadequate both as to location and parking capacity. As a result there are always more taxis and auto-rickshaws on stands which are allotted only for certain number. Unauthorized stands are also prevalent in many localities.

The traffic load in Delhi is increasing every day and unless firm steps are taken, the parking situation will deteriorate further.

Adequate off-street parking should be provided making side-walk parking prohibitive.

The reason for curb and side-walk parking in Delhi is lack of availability of adequate off-street parking space.

Parking surveys, to determine present street and off-street parking demand and probable future demand should be undertaken immediately. Potential off-street parking sites, such as vacant plots and obsolete buildings in business areas should be mapped which will facilitate determination of necessary parking areas.

Public Transit

In Delhi a large number of workers, shoppers and students depend upon the Delhi Transport Service to go to and from their houses.

In the past five years there has been a 100 per cent. increase in the number of transit riders. In 1955 the total number of transit riders was six crores, whereas in 1950 it was three crores.*

The proportion of the population using transport has increased in Delhi. To-day the Delhi Transport Service carries nearly 1,67,000 people per day through 3,132 trips, covering about 32,000 miles.** Yet it has not been able to cope with the peak hour demand of the public, with the result that transit patrons are compelled to use the

* Figures supplied by Delhi Transport Service.

** See Appendix III—Table—3.

motor-cycles and rickshaws. There are about eight hundred motor-cycle-rickshaws in Delhi which serve over 42,400 people per day. But as their fares are higher than that of Delhi Transport Service, not many people can afford them.

Again the travel time distance by Delhi Transport Service is rather long. Thirty to forty minutes is about the maximum amount of time that most people are willing to spend in travel between house and work, whereas it takes well over 66 minutes to travel a distance of 10 miles between Kingsway Camp and Central Secretariat. This, of course, is partly due to want of more direct routes and partly because of traffic congestion.

It must be borne in mind that transit vehicles are by far the most economical users of street-space in terms of passengers carried. Therefore major emphasis should be placed upon making the service it provides attractive to as large a segment of the population as possible. Perhaps the traffic congestion during peak hours can be alleviated by staggering of work hours. At present the working hours in Delhi are between 10 A.M. to 5 P.M. This results in the simultaneous movement of workers, thereby creating traffic congestion. If some of the offices change the working hours to 9 A.M. to 4 P.M. this device would help in spreading the present concentrated traffic load effectively and is a particularly helpful means of increasing the load factor of transit lines. Moreover, the spreading of traffic peak proves helpful for reducing congestion and increasing street capacity.

Routing of transit vehicles often bears a direct relationship to the efficiency of traffic operation. Studies should be made to be certain that the present routings serve the convenience of transit riders and eliminate as far as possible delays and interferences between transit and other traffic. The routings must be reasonably direct, accessible and attractive. Route number-21 plying between West Patel Nagar and Kingsway Camp carries a large proportion of passengers going to Civil Lines and Old Delhi. Although Kingsway Camp lies north of Patel Nagar yet the route is indirect as it goes east towards Connaught Place and then south covering about 12 miles in 75 minutes. The travel time on this route could have been reduced by finding a direct route between West Patel Nagar and Kingsway Camp.

The Delhi Transport Service has prepared a Second Five-Year Plan for the development of local transit. The plan aims at meeting the growing need of Delhi and its environs. Its main features include provision of a regular bus service with 10 minute frequency during peak hours and 20 minutes frequency during slack hours on all major routes. This will involve a large addition to the existing fleet of 400 road worthy buses. Addition of more buses may not necessarily solve the problem of the traffic congestion on our roads which causes delay on many routes.

Extensive studies are therefore needed to arrive at a lasting solution to Delhi's local transit problem.

It was not possible to carry out these studies during the Interim

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* Sample Survey conducted by, Town Planning Organisation.

** See Appendix III—Table—3.

General Plan stage. But these will have to be undertaken while preparing a long range general and comprehensive plan.

Among other things these studies will include a sample survey from which number of persons, workers and school children per house in Delhi and its environs can be calculated and applying this average to the actual number of houses or to the number calculated on a similar basis, approximate totals of persons of all classes, workers, shoppers and school children, can be determined. Having obtained the above information, the next stage would be to estimate the amount of travelling which will be expected to be performed, both individually and otherwise. Of workers, how many would use their own cars or use bicycles or could easily walk to work. How many children would walk to school. This study will reveal the probable week day travellers to work, school and shop, and Saturday and Sunday travellers to places of recreation and amusement.

Inter-City and Inter-State Bus Service

Inter city Bus Service consisting of various private and publicly owned bus lines, serves as a major transport link between Delhi and the outlying towns and villages in its environs—such as Aiyanagar, Palwal, Azadpur, Indranagar, Bagh Dewas, Najafgarh and Garh. The economic life of the people living in these little towns and villages depends on Delhi and the Bus Lines, form a major link between them and Delhi. Delhi is also served by Inter-State Bus Lines which connect Delhi with Ambala, Karnal, Hissar Chandy in Punjab and Meerut, Ghaziabad, Saharanpur and Dehra Dun in U.P.

There are two bus terminii—one located at Delhi Main Station and the other at Ajmeri Gate. But there is no proper terminal building and as a result buses load and unload passengers on the curbs thereby interfering with through traffic and constitute a major traffic block on the street.

Therefore there is a need for adequate terminal facilities to accommodate all inter city and inter state bus lines, located and designed to facilitate and safe-guard transfer of passengers and their luggage to and from local carriers. Studies such as the volume of passengers, their origin and destination, relationship to local carriers, loading and unloading and other traffic characteristics should govern the location, design, and operation of this bus terminus.

Railway Transport

Delhi is served by four-major broad-gauge lines and one meter-gauge line that connect it with all parts of India. Bombay, Calcutta and Madras are connected by broad-gauge lines whereas Rajasthan and Cutch by meter-gauge.

Railway constitute a prominent means of transport for Delhi both for goods as well as people. Delhi being the major goods distribution centre for entire Northern India receives large amounts of shipments of goods from important cities in India. During the last year the amount of incoming goods into Delhi averaged to about 97,295 maunds per day, the largest load of which was received at New Delhi Station. Whereas the amount of outgoing goods averaged 25,392 maunds per day, the largest amount of shipment being made from Delhi-Kishanganj Station.

* Figures obtained from Northern Railway Authorities.

The number of inward passengers during the last year averaged to about 19,872 per day, with the largest number detrained at Delhi Main Station. The number of outward passengers averaged to about 24,137 again with largest number entraining at Delhi Main Station.

The railway network in Delhi divides the city into several parts, making vehicular traffic circulation difficult and hazardous. It also introduces an element of nuisance, such as noise and smoke, to abutting residential areas.

Perhaps it may not be economically feasible to divert the lines, at an early date; but thought should be given to this matter. The possibility of re-locating the marshalling yards to Tuglakabad should be given consideration.

The railway authorities have a proposal to construct a railway link which will complete the ring railway, and another link near the Government Housing Factory which will connect the main link from Mathura to the ring railway. A third link will connect Rohtak line to Ambala line. When these proposals are implemented it will help to divert the goods traffic which at present passes through the heart of urban Delhi. There may be a possibility of the Ring Railway being utilised for public transit to serve strictly local passengers.

The railway line now passing through Shahdara bisects the community and should therefore be located in order to avoid some of the problems that now prevail in Delhi.

Level crossings, particularly where major traffic carrying roads intersect the railway lines, hold up traffic causing unnecessary delays. Grade separation should therefore be provided at such crossings. For example a grade separation is warranted where the proposed Ring Railway crosses the intersection of Upper Ridge Road, Kitchner Road, Ring Road and the Cantonment Road. Grade separations should also be provided where the Ring Road crosses the Railway lines to assure continuous traffic flow and safety.

Air Transport

Because of the ability of the air transport to cover great distances in a short space of time, flying has become a popular means of transportation in India in recent years.

In Delhi the total number of passengers embarking and disembarking at Palam and Willingdon during the last year, was about 1,24,000. This is a considerable increase over the previous years.

The passenger traffic is expected to increase and Delhi must be provided with a more adequate airport to cope with this increase.

There are two airports in Delhi, Willingdon and Palam. Willingdon airport dates back to the founding of New Delhi, and was for many years, the only Airport in Delhi; but as it was incapable of handling larger aircraft, Palam airport was built during the last war.

There is no room for its further expansion and particularly because of its location it is questionable whether Willingdon should be used for anything more than the Delhi Flying Club etc.

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* Figures obtained from Northern Railway Authorities.

** Figures obtained from various airlines.

While some domestic traffic is received at Willingdon, Palam caters for the bulk of the domestic and international air traffic. It is also the Air Force Station and handles all military flights. For security and other reasons it is necessary that the Civil and Military airports be separated. Since Palam is close to the Defence Establishments of the Cantonment, it should remain with the Air Force and a new site be found for International Airport.

It has been more or less decided that Palam would stay where it is as a defence Airport, the Civil Aviation would have a separate Airport.

In this connection the Civil Aviation authorities have already investigated the possibility of potential sites for the Airport. Out of the three sites surveyed, the most suitable one, according to the authorities, is located east of the Jumna and south of Shahdara.

This site though subject to floods, could after improvement become a desirable site for the Airport, because of its proximity to the Central area of the City, and suitable weather conditions. The southern crossing over the Yumna would serve as an access to this proposed Airport.

CHAPTER V-A

UTILITIES AND SERVICES

Water, sewerage and electricity are the three basic utilities which are necessary in any urban community. The responsibility for the planning and designing of utility systems does not rest with the Town Planner. But it is his concern to assure himself with the possibilities of supplying the utilities for the maximum population for whom the town is being planned. No planning would be complete for a city, without a convincing indication of the feasibilities of supplying the necessary utility services.

Water Supply for Greater Delhi

The Delhi Joint Water and Sewage Board, which is a statutory body, is responsible for the supply of water in bulk and the treatment and disposal of sewage from all the constituent bodies. These constituent bodies get the filtered water from the Delhi Joint Water and Sewage Board at the reservoirs. It is the responsibility of these bodies to distribute the same to the individuals. Similarly the construction and maintenance of the trunk and branch sewers is the responsibility of the constituent bodies but the outfall sewers, the sewage treatment works and the disposal of the sewage is the responsibility of the Delhi Joint Water and Sewage Board.

Source of Supply

At present practically all the water is drawn at Wazirabad intake works which is situated to the north of Delhi, about a mile from Timarpur. The water is drawn from the river Jumna and pumped to the settling tanks located nearby. From these tanks water gravitates through closed conduits to the rapid filteration plant situated at Chandrawal. At Chandrawal, both the old and new, treatment plant consists of the chemical house, clarifiers for settling the waters and rapid gravity filters. After filteration water is disinfected with chlorine and is then pumped to various service reservoirs situated in the different parts of the city. The Chandrawal Water Works were originally started in 1889. At that time the population was very small and water was drawn from the river at that site. With the increase in the population the intake to the water works was shifted to Wazirabad and the treatment plant has been gradually extended to meet the growing needs of the city. At present the capacity of the plant is about 60 m.g.d. which is being increased to 75 m.g.d. This would be ready by November, 1956.

There is a small water filteration plant at Okhla Water Works. Water from the river Jumna is pumped to the filteration plant near the Jammia Millia and after treatment is pumped to the reservoirs at Kalkaji. This plant was installed to supply water to the rehabilitation

townships of Kalkaji and Malviya Nagar and the capacity of this plant is only 2 M.G.D. The Chandrawal filteration plant supplies water to:

(1) Notified Area Committee, Civil Station.
(2) Areas within the Delhi Municipal Committee's limits.
(3) Notified Area Red Fort.
(4) Areas within the limits of the New Delhi Municipal Committee.
(5) Delhi Cantonment.

From Okhla Filteration Plant Water is supplied to:

(1) Part of South Delhi Municipal Committee.
(2) Part of the New Delhi Municipal Committee.

At present no filtered water is supplied to the West Delhi Municipal Committee as this body has recently come into existence and is drawing water from hand pumps.

The Shahdara Municipal Committee is also drawing its water from tube wells in the Shahdara area. The supply is on a restricted basis.

Per Capita Consumption of Water

The per capita consumption of filtered water depends on many factors such as the dependability of the source of supply, the living standard of the people, presence of underground sewerage, general standards of plumbing and sanitation. At present in the Delhi Municipal Committee area about 30 gallons of water per capita is supplied per day. In the Civil Lines and the Cantonment areas about 40 gallons per capita are supplied per day and in the New Delhi Municipal Committee area about 55 gallons of water per capita are supplied per day. The average consumption in the urban area comes to about 34 gallons per capita per day.

Allowance for per capita Consumption

A provision of about 45 to 50 gallons per person per day of filtered water is considered reasonable. The supply is to be on the continuous basis and the connections should be all metered. This is necessary to check the wastage of water. Almost all the towns in India are on intermittent system and the average consumption is not more than 25 to 30 gallons per capita per day. Over and above this unfiltered water is supplied for the maintenance of gardens and lawns in the New Delhi area. This comes to about more than 40 gallons per person. In the other parts of Greater Delhi area very little or no unfiltered water is supplied. If these localities are to be developed with gardens and lawns it would be necessary to provide unfiltered water supply in all these areas especially the New Areas, both Governmental and Privately developed all round the town.

The Delhi Joint Water and Sewage Board is proposing to supply about 150 Million Gallons of filtered water, 90 Million Gallons of which would be treated at Chandrawal and 60 million gallons at the new plant to be installed in the South of Delhi. The provision in the Second Five-Year Plan is for 112·5 M.G.D. capacity.

Chandrawal Extensions

At present the river Jumna is not in a position to supply this quantity of water in the summer months. A tentative arrangement has been arrived at whereby the Government of Punjab allows additional water to be thrown into the river Jumna from the escapes. This arrangement is being improved upon and regular canals will be constructed upstream of Wazirabad from the escape known as Bowana Escape so that in case of depletion of water into the river Jumna more water will be made available at Wazirabad. The filteration plant at Chandrawal is being enlarged on this basis.

An independent water treatment plant will draw the raw water from the river Hindan. It is proposed to construct a reservoir on the river near Ghaziabad. About 60 M.G.D. of water will be treated from this source. This source will supply water to both, (1) the areas rapidly developing to the south of Delhi, and (2) to Shahdara.

Reservoirs

Several reservoirs are constructed on top of the Ridge to store water and to supply the same at peak demands. Several new reservoirs are also to be constructed in the near future.

Sewage

The Old Delhi Sewage System is based on combined sewage and storm water flows, while the New Delhi and extensions are designed on separate sewage system. Many parts of Old Delhi are still on dry system. It is however proposed to provide underground sewage in all colonies both Government constructed and private.

At present there is one sewage treatment plant at Okhla. All the sewage from the Notified Area Committee, sewered parts of Delhi Municipal Committee and the New Delhi Municipal Committee collects at Kilokri pumping Station from where it flows to the sewage treatment plant at Okhla. The plant is a modern activiated sludge combined treatment plant and Bio-Filter Plant. The treated effluent from the plant is disposed off on land for growing vegetables, grass and grains which are supplied to the city. The sludge is partially treated and dried and is used as manure. The capacity of the present plant is only 36 M.G.D. An extension of the plant is under finalisation. Sludge Digestion and Utilisation of grass is under completion. It would be a complete treatment plant, the effluent from which will be used for irrigation and sludge properly digested.

An independent sewage treatment plant to treat about 20 M.G.D. is under construction to the North of Delhi near Coronation Pillar. The sewage after treatment would be put on land and sludge digested and gases of decomposition utilised. Another sewage treatment plant will be constructed to the west of Delhi near Keshopur. It will have a capacity of 7 M.G.D. and will treat sewage from the western Extension. The treated effluent will be used on land and the sludge utilised as manure after gases of decomposition are utilised for power production.

At present many localities of Notified Area Committee and a large area of Delhi Municipality are not served by under-ground sewers. This work is being executed in stages. It is proposed to provide underground sewers in the whole of Greater Delhi, including all refugee colonies many of whom are served at present on dry system. The three sewage treatment plants would be capable of scientifically treating all the sewage so as to enable all products of decomposition being utilised and irrigate a total farm area of about 8,000 acres.

Electricity

(a) The Delhi State Electricity Board is the sole agency for generation and distribution of power in Delhi Urban Area. It runs on a no profit and no loss basis.

With the influx of refugees from Pakistan after the partition and the enormous increase in the rising population, the consumption has increased considerably causing a terrible power famine. It has also adversely affected the development of industries and hampered the work of rehabilitating the refugees in colonies like Malaviya Nagar.

It was previously envisaged that with the completion of Nangal Hydro-Electric Power Station arrangements could be made to receive the bulk supply from this source. It was also estimated that from Nangal 1,32,000 k.w. of power could be tapped. All this has fallen through as it is now found that Nangal Project Authorities would be able to supply at best 10,000 k.w. as against the immediate present requirements of nearly 40,000 additional k.w. The Board is already supplying 54,000 k.w. though the Central Power House at the Rajghat Thermal Power Station generates only 50,000 k.w. The overloading of the system is resulting in frequent break downs.

The first instalment of 6,000 k.w. power from Bhakra was expected to be received by the end of July. The rest of the allotted quota *i.e.* the remaining 4,000 k.w. will be supplied by the end of the year. Thus the total power of 10,000 k.w., beyond which no additional supply by Bhakra Nangal Project is possible in the next four years or so, will not even touch the fringe of the problem of the States' Power shortage which is still accentuated, as observed already by the rising demand for electricity for domestic as well as industrial purposes.

When the inability of the Nangal Authorities to meet Delhi's present power requirement was realised, plans for generation of power in Delhi were again revived and offers invited from firms interested in the project. Four foreign concerns offered to set up a power generating plant in the city. But none of them was in a position to assure delivery of the plant before two years. Erection of the Plant would take an additional year. In view of the delay involved, no decision was taken on the project.

Under the Second Five-Year Plan period, it is envisaged that about 54 villages in Delhi State are to have the blessings of electricity. At present in the context of the acute shortage of power which afflicts the normal domestic and industrial requirements in the Urban Delhi, it remains to be seen how far such extension of electrification in the rural areas works out to satisfactory condition.

(b) Telephones: Urban Delhi is served by five telephone exchanges sited in various parts of Delhi. Each exchange is capable of providing lines to the areas within the orbit of 5 miles.

The following are the five exchanges:—

(1) Tis Hazari.
(2) Lothian Road.
(3) Connaught Place.
(4) Karol Bagh.
(5) Safdarjang.

In the immediate future expansion, there is also a provision for an exchange at Delhi Gate.

CHAPTER VI

SLUM CLEARANCE AND REDEVELOPMENT

It has not been possible in the short period of time allowed for preparation of the Interim General Plan, to carry out the detailed surveys required for an accurate assessment of the magnitude and complexity of the slum problem in Delhi. Therefore this chapter is necessarily confined to certain broad observations, that were formulated as a result of the preliminary survey work that was carried out in the last few months.

Findings

Even before 1947, the absence of a proper planning programme and the inability of essential services and community facilities to cope with an ever increasing population, had led to the creation and gradual growth of slums within and without the walled city of Delhi. With partition and the influx of refugees that followed, the existing problems were further intensified and aggravated.

The real problem of congestion is in Shahjahanabad or Old Delhi as it is known today. According to Mr. A. P. Hume, the city was capable of housing 2,48,000 persons in 1936 and he therefore recommended additional housing for the extra 1,00,000 persons who were then living in the old city. Today the population gathered within the old city is in the neighbourhood of 10,00,000 persons, and the building activity since 1936 has only partially met this extra demand. Census figures for the old city show that while the rate of increase was gradual in the beginning, it began to shoot upwards from 1941 because of increased urbanization and as a consequence of the partition of India.

*Population of Delhi City**

1891	.. 2,00,000
1901	.. 2,06,000
1911	.. 2,25,000
1921	.. 2,48,000
1931	.. 3,48,000
1941	.. 5,22,000
1951	.. 9,15,000

At the present time the average net density of population in the old city varies between 400 to 600 persons per acre, and in some areas it is as high as 1000 persons per acre. In addition to overcrowding, the general deterioration of houses through decay has been

*Census of India 1951.

a major cause of slums in the old city. Dilapidated structures, overcrowding, faulty arrangement of rooms, lack of ventilation, electricity, and sanitary facilities are some of the characteristics of sub-standard housing. One method of measuring the quality of housing considers that each of the following listed conditions represents a basic deficiency, and that any dwelling unit having four or more deficiencies is a slum.

1. Water supply subject to contamination.
2. Limited or inadequate supply of water.
3. Lavatories located outside the dwelling unit.
4. Bathing facilities located outside the dwelling unit.
5. Less than 40 square feet of sleeping area per person.
6. Lack of proper egress and ingress.
7. Lack of windows for light and ventilation in rooms.
8. Lack of installed electricity.
9. Stabling of cattle and other animals within the dwelling unit.
10. Serious deterioration or dilapidation of the structure.

It is difficult to spot an area within the city that is either not a slum, or on the way to becoming one. Squalor and filth, dirt and disease, these are the hall marks of life in the old city. Some of the main causes that have led to these conditions are listed here:

1. Structural dilapidation of the tenements.
2. Overcrowding of tenements on the land.
3. Overcrowding of people in these tenements.
4. Lack of civic services and community facilities.

The magnitude and extent of the problem defy description for within the limits of the Delhi Municipal Committee there are 700 *"katras"* housing a population of over 1,00,000, some 35 *"bustees"* housing another 90,000 persons, and in New Delhi over 30 labour camps with a population of 30,000. These *"katras"* and *"bustees"* include extremely unhygienic and structurally unsound structures, with no proper ventilation, drainage, latrines, or filtered water supply, and thus, in their present state are unfit for human habitation. The existence of cattle-sheds, animal stables, factories, workshops, and slaughter houses within this thickly populated area has added to the prevailing unhygienic and insanitary conditions.

The slum dwellers are generally tenants, though in some cases it was found that the houses were built by them, while the tenancy related only to the land. In other cases where both the land and house are rented, the land often belongs to one person and the house to another. There is a wide range of income groups within the slums, from the indigent and improverished to the rich and well-to-do, who own their own homes and businesses. A majority of the occupants, however, belong to the lower economic strata and include such trades and occupations as common labourers, construction workers, paid hawkers, dhobis, mochis, rickshaw pullers, tonga drivers etc. The poverty of the slum dweller is thus a major contributory factor to the growth of the slum areas.

Analysis of the Findings

It is obvious from the facts mentioned above that slum clearance and urban redevelopment is a task of major proportions, and that it is a vitally necessary task because of the large number of people involved. It is possible to distinguish two characteristic features of the slums in Delhi, namely overcrowding and insanitation. Of these two distinguishing features, insanitation may result as a direct effect of overcrowding, or it may occur independently. These conditions are also present in conservation areas—a conservation area being defined as an area which is beginning to deteriorate, but which may be rehabilitated and prevented from becoming a slum. Some areas within the old city fall within this category, and therefore in a comprehensive redevelopment programme, the aim should be simultaneously to clear the slums and to reclaim these conservation areas.

It has been mentioned elsewhere in this report that slums have existed for many years in Delhi, and Government were not unaware of their existence. But unfortunately the approach towards the problem until the present time has been in a piecemeal fashion. No detailed surveys were conducted and no thought given to the human side of the problem. The authorities concerned attempted to redevelop such areas in the City as they were able to, without a re-housing programme for the displaced inhabitants, or even a comprehensive planning approach, with the result that their efforts at slum clearance failed to make much headway in solving the problem. This failure is attributed to various reasons, such as lack of funds, limited legislative powers etc. These factors did indeed hamper re-development efforts, but basically the approach to the problem was a limited one. The social, economic, and human factors of the city and its people were not considered at all. Re-stating the reasons for past failures will only be of help if we are able to learn from them, and make sure that the present effort considers the human needs and desires of the people.

Suggested Proposals

A consideration of the findings and their analysis leads to certain recommendations which are listed here. A basic consideration, however, is that any programme of slum clearance and urban redevelopment must be a comprehensive programme, and one that will go beyond mere engineering and architectural solutions to the social, economic and human factors involved. In the light of this guiding statement the following recommendations are made:

(1) The city should take over and fulfil the responsibilities for street cleaning and removal of garbage, nightsoil and other refuse from the slum areas.

(2) Civic services should be extended to the conservation areas, and an attempt made to provide community facilities.

(3) Dairy farms should be established on the outskirts of the city, so as to remove existing cattle sheds from residential areas. In the meantime, the stabling of cattle should be prohibited in congested areas, and a licensing system set up for other areas of the city.

(4) The slaughter houses should be moved from the heart of the city to a selected area outside, along with their ancillary trades.

(5) Obnoxious trades such as lime kilns, potteries etc. and major industrial concerns should be moved out of the old city and into the areas recommended in the Interim General Plan.

(6) Land made available by the shifting and removal of these uses should be used for dispersing and resettling the excess population from presently overcrowded areas, and for providing necessary community facilities.

(7) Dilapidated and structurally dangerous buildings should be demolished, and the areas redeveloped within the framework of the Interim General Plan.

(8) A rehousing programme should be undertaken keeping the following two considerations in mind:

(a) Selecting sites for rehousing slum dwellers as near as possible to their existing work centres or creating new work centres near the proposed rehousing areas.

(b) Where rehousing is involved, care should be taken so that the existing community and social patterns of the people are maintained and strengthened.

(9) A detailed physical and socio-economic survey should be taken within the area defined on panel 6 showing slum conditions within the city. After completion, the physical survey should show the type, construction and condition of every building within the area. The socio-economic survey need not be conducted on a house to house basis, but may take advantage of random sampling or other techniques to arrive at a valid result. This survey should cover family size, number of employed, unemployed and under-employed persons, age and sex distribution, place of employment, mode and cost of transportation, living space, presence of sickness and disease, average income of family and other related matters.

Items six, seven, and eight involve structural changes and require planning which will have to be done within the framework of the Interim General Plan. Removal and rehabilitation of dwellers of overcrowded areas will require a well phased programme spread over a number of years, and this should constitute the most important part of the planned redevelopment of Greater Delhi. In the execution of these schemes it is important to obtain not merely the goodwill, but also the active participation of the people affected. In this respect the executive agencies should enlist the active co-operation of all social welfare agencies and of the community itself. The execution of a slum clearance and urban redevelopment programme will need legislative backing, and this will have to be secured by appropriate amendments of the existing laws, or by enactment of new ones. The legislation should vest powers in the State Government or proper local body to:

(a) declare a defined area as a slum and as unfit for human habitation,

(b) to provide for the creation of an executive authority to take over the areas so declared as slums, and

(c) to direct operations for demolishing, reconstructing, and redeveloping these slum areas.

INTERIM GENERAL PLAN

CHAPTER VII

OBJECTIVES AND POLICIES

Following considerations of the research data presented in the previous section of this report, it is the purpose of this chapter to set down certain basic facts, to postulate certain assumptions about the future of Delhi and to make a statement of Planning policy for Delhi, and the principles to guide the development of the Interim General Plan.

The Planning process interprets research, applies standards and translates assumptions, policies and principle into a general plan to guide the future physical development of Delhi.

Background of Delhi

1. Delhi has long been the capital city of India and in recent years has seen a formidable increase in government offices, agencies and staff.
2. It is an old and historic city with many ancient monuments and buildings that are worthy of preservation.
3. The population of Delhi has shown an abnormal increase because of the influx of refugees after partition.
4. All energies have been directed towards rehabilitating and rehousing the refugees, and in so doing many new slums have been created because of the piece-meal nature of the planning effort.
5. The city has grown in a haphazard fashion along its periphery, and this has placed a tremendous burden on the existing public utilities and municipal services which have not been able to keep pace with the demand.
6. Existing trade patterns have been disrupted by partition and with the decline of Amritsar, Delhi has assumed increasing importance as a distributing centre for Northern India.
7. Similarly the industrial development of the Delhi Region has been accelerated by the immigration of many industrialists from the Punjab.
8. The area of influence of Delhi extends beyond the present political boundaries of Delhi State.

Assumptions

Consideration of the basic facts mentioned, leads to the formulation of certain assumptions about future trends.

1. The size of the governmental establishment will continue to increase as the public sector expands.

2. Coincident with the economic development of India, Delhi will assume increasing importance as a commercial, distributing and financial centre for Northern India.
3. Any large scale industrial development is likely to take place outside the present boundaries of Delhi State, because of the availability of cheap labour at places like Faridabad and Sonepat, and the difficulty of obtaining essential services closer to the urban core.
4. The population of Delhi can now be expected to follow a normal growth pattern, and it is extremely unlikely that there will be such a large scale influx of population into Delri, as there was after partition.
5. The necessary land services and utilities for the expanding population will become available.

Policies

Certain basic policies must guide all planning decisions and these policies are set forth here.

1. The planning area of Delhi should not only include the urban core but also areas beyond the present boundaries of Delhi State that constitute its hinterland, but at the present stage and for the consideration of an interim plan the planning area is necessarily limited.
2. Concentrated industrial growth must be planned for outside the metropolitan area of Delhi State.
3. The existing heavy concentration of population within the old city must be reduced substantially.
4. Slaughter houses and cattle sheds must be moved outside the old city.
5. Planning activities and decisions must be directed so as to develop a proper balance of land uses in order to provide:

A. *For Residential Areas*:

A variety of choice in housing accommodation aiming at heterogeneous neighbourhoods of people with different incomes and professions.

Nearby work centres, markets, schools, parks and community facilities.

Necessary public utilities and services.

Stable Land values.

B. *For Shopping Areas*:

Proximity to those persons who will buy.

Variety of shops in concentrated locations instead of *"ribbon"* developments.

C. *For Industrial Areas*:

A nearby labour pool.

Open land for building expansion.

Direct access to transportation routes.

Good housing for employees.

D. *For the City as a whole:*

A stable community with employment and work for all.

A relationship of land use areas that makes possible the adequate provision of public utilities and facilities.

Principles upon which the broad land use proposals are based

A. *For the community as a whole:*

1. The division of the community into distinct functional areas for long range planning purposes, separating those that have to do with LIVING, those that have to do with SHOPPING, those that have to do with OPEN or AGRICULTURAL USE, those that have to do with INDUSTRIAL USE, and those that have to do with GOVERNMENTAL AND INSTITUTIONAL USE.

2. These functional land use areas to be delineated on the basis of the knowledge gained from the land use inventory, with the purpose of:

preserving those areas which have developed with a healthy pattern and consistent use,

indicating for special study and possible change those areas which have developed with conflicting or uneconomic patterns of use,

guiding new development into desirable uses.

locating each land use area in a manner so as to insure that each will function properly in relation to other land use areas and to the Metropolitan areas as a whole.

3. The boundaries between these functional land use areas to be defined wherever possible by topographical or natural features, by the location of major traffic routes, and by existing or proposed land uses which fit into a healthy balance of community development.

4. These functional areas to be grouped with the old city and the Secretariat Group as the core, so as to preserve Delhi as an organic urban unit, retaining its unique character and identity.

5. Each category of land use to be protected from encroachment of conflicting uses.

6. The recognition of the fact that general plan objectives are long range in nature, and that intermediate controls are required to preserve certain open areas until the long range use becomes economically feasible. This means the prevention of spotty or conflicting development now, which would make the long range use impossible to achieve later.

B. *For Living Areas:*

1. Provision of density standards to insure adequate space, light, air, safety, and amenities.
2. Efficient layout for the provision of streets, drainage and utilities.
3. Proximity to schools, parks, local, shopping, public transit and work centres.
4. Protection from noise, odour, smoke, through traffic, and blight arising from non-residential uses in living areas.
5. Variety in living accommodation and neighbourhood character.
6. Preservation for residential use of those areas having a pleasing natural aspect, views, or proximity to hill or park systems.

C. *For Government Areas:*

1. To serve as the primary economic activity and source of employment.
2. Directly accessible to traffic ways and public transit for access by personnel.
3. Provided with land physically suitable for building in large enough parcels so as to meet current and projected trends in demand.
4. Protected from encroachment of other conflicting uses.

D. *For Working Areas:*

1. To serve as the secondary economic activity and source of employment.
2. Directly accessible to truck and rail routes for the movement of goods, and to traffic ways and public transit for access.
3. Grouped and located for efficient service by public utilities.
4. Provided with land physically suitable for building in large enough parcels so as to meet current trends in demand, and in the quantity indicated from studies of economic potential for the Delhi area.
5. Meeting minimum design standards so as to ensure livability of adjacent areas of different use.
6. Protected from encroachment of other conflicting uses.

E. *For Recreation Areas:*

1. Facilities to be developed in proportion to anticipated future population and in accordance with studies of present and potential habits of use.
2. Promoting a comprehensive park and recreation programme based on the provision of:

NEIGHBOURHOOD FACILITIES, primarily for elementary school ages within walking distance of residential areas.
DISTRICT FACILITIES, primarily for high school age groups and adults, and located to serve major residential

areas. SPECIAL ACTIVITY FACILITIES (National Parks, Zoological Gardens, River front development) to serve the community as a whole.

3. Provision of these facilities, in so far as possible, to accomplish multiple purposes, that is, in conjunction with flood control, reclamation work, school uses, and preservation of monuments having a historical or architectural value.

F. *For Shopping Areas:*

1. *The City's Central Business District.*

Serving as the major commercial centre for Northern India with financial, professional, and major shopping facilities. Directly accessible from, but not cut through by major highways.

Assembled and compactly grouped in relation to public transit, off-street parking and loading facilities. Occupying a land area based on the needs of anticipated future population, in accordance with general theories on spending habits, purchasing power and ratio of sales to commercial area.

2. *Sector Shopping Facilities.*

Serving major residence areas with shopping facilities based on the economic requirements of the particular district, in which they are located.

Accessible from major street systems.

Of compact and co-ordinated design and adequately provided with off-street parking and loading facilities.

3. *Local Convenience Shopping Facilities.*

Small in scale, serving only day to day needs of adjacent residential area.

Walking distance of area served.

Harmonious design in keeping with its location directly adjacent to residential use.

CHAPTER VIII

INTERIM GENERAL PLAN

From the principles and objectives discussed in earlier chapters of the report, and on the basis of the preliminary surveys undertaken, the Interim General Plan has evolved. To develop a Comprehensive Plan for the National Capital Region, it is necessary to conduct detailed planning analysis of the factors: physical, economic, social, political and cultural, which form the basis of urban living. Because so much study remains to be done, the present plan has been called as Interim, while the specific subjects which must engage the attention of the people and authorities concerned in the future, are recognised and mentioned in the proposals.

For this tentative plan the proposals are mainly confined within the urban core as indicated on the Land Use Plan. It was not possible during this stage to ascertain with precision the potentials of population, economic base and urbanisation on a long range basis. Therefore, the recommendations of the Interim General Plan are meant primarily as a guide for the physical development of this area, before a Comprehensive Plan for the whole National Capital Region is developed.

This plan is thus a beginning, and not the end, to a long range Comprehensive Plan. In fact this may be taken as a "plan for planning."

The major proposals are based on a basic premise: planned physical and economic growth of Greater Delhi, a more logical pattern of residential densities and facilities provided for a healthy social and cultural living. This is based on a further assumption that in order to work for the effectuation of the plan, communications and transportation will have to be radically improved.

Major Recommendations

I. *Land Use*:

All proposals in urban planning relate to the use of land for carrying out various functions. A sound land use policy aimed at rationalising 'land costs' in relation to the land use and tax structure is essential. At this stage it is difficult to enunciate, on the basis of these preliminary surveys, such a policy. Nevertheless, for the long-range plan, a detailed study should be made of this aspect.

1. Government Offices

In the past it had not been possible to follow a well co-ordinated policy in regard to location of the offices of the Central Government. The natural outcome for the lack of policy has been that either the office buildings were concentrated in a relatively short area or else located at odd corners throughout the urban complex.

Since the Government of India is the largest "basic employer" in this region, it is suggested that serious consideration should be given for a planned decentralisation to outer areas of the urban core, and possibly outside the Delhi region.

Any specific recommendations towards decentralisation could only be made after a study and analysis of:

- type of office operations that could be performed more efficiently by dispersal.
- the dependence of the decentralised offices to the central offices.
- a study on the possibility of satellite towns with government offices as one of the primary economic activity.

For the interim plan the following proposals are made:

1. The area between Queensway and India Gate should not be developed intensively for offices as this would result in undesirable concentration and additional pressure on circulation system. However, this land could be developed as a Cultural and Convention Centre. Museums, art galleries, convention halls, conference buildings and other cultural activities for which there are at present inadequate facilities, could be located in this area. This space can thus be treated architecturally from Rashtrapati Bhavan on one end to the National Stadium on the other. This would not load the streets unduly, and on the other hand, with a proper architectural treatment, it would give a better scale to the Central Vista.

2. The Old Secretariat site at present accommodating the offices of Delhi State Government is rather suitable and the possibility of future expansion in this area should be explored.

3. It may be desirable to study the possibility of re-locating the proposed Defence Headquarters near Central Secretariat to the south-western part of the urban area preferably in the Cantonment Area itself. In fact, for the Cantonment Area which is outside our planning jurisdiction, an over-all city plan should be prepared as an integral part of the National Capital.

2. Residential:

Healthy residential areas with minimum sanitary and other community facilities are of prime importance to the operation and survival of modern urban life.

There are extreme contrasts in the residential densities and living patterns in Delhi area. In older section of Delhi, there are houses which were built more than a hundred years ago and are still being used with minor additions and alterations. Many of these houses lack the basic facilities and sanitary equipment. On the other hand there are thousands of recently built houses which also lack facilities, like the filtered water supply, sanitary sewerage and adequate drainage. Although the Government of India is the biggest developer in the residential sector (about 45 per cent. houses have been built

by the Government), most of these residential areas were planned without consideration of such community facilities as schools, parks, playgrounds, tot lots, shopping and other social or communal amenities.

The residential areas of Delhi could be broadly described in three categories:

(a) Rather good areas, mainly in Civil Lines and New Delhi, which mainly lack community facilities such as schools, local shopping area, tot lots, playgrounds, etc. These areas are needed to be provided with minimum of such facilities.

(b) Areas developed during the post independence era which not only lack all the above mentioned amenities but also water supply, proper sanitation, drainage and open spaces. Most of these have been developed by land speculators exploiting the housing shortage. They are ill-planned with odd size plots, narrow streets and with no regard to circulation. These areas could possibly be provided with a minimum of community facilities on any unbuilt or vacant land either inside the subdivision or immediately adjoining.

(c) Areas which are deficient in public amenities and have become more less unfit for healthy living. These are blighted and dilapidated and include some of the well known slums. These areas are situated mainly within the confines of the Delhi Municipal Committee and should be radically rebuilt according to a long-range plan.

A three point plan has been proposed for the future residential areas:

BASIC SERVICE FACILITIES:

(1) (a) filtered water supply, proper sanitation, storm water drainage, electric supply;

COMMUNITY FACILITIES:

(b) schools, open spaces, parks, play-grounds, nurseries, local shopping and health centres.

(2) Residential areas to be designed as integrated social units. The layouts should have the following considerations:

- Variety in the design of dwelling units for different social groups and incomes.
- Diversity of population and occupation.
- Proper circulation and inter-connection with other neighbourhoods and communities. The neighbourhood streets to serve only the residents and not to be used as through roads.

(3) Control of residential densities: Tentative net densities considered during this plan are—

Low	1—50	persons/acre
Low Medium	51—100	" "
High Medium	101—150	" "
High	151—200	" "

It is suggested that the future residential areas developed by the various goernment ministries should encourage the idea of "planned neighbourhoods" aiming to minimize the social and economic segregation. Instead of providing blocks of flats or dwelling units of one-type designs and reserved for a certain rank of employees, it would be more desirable, both socially and economically, to design a well integrated neighbourhood containing different types of dwellings to suit different family requirements rather than official rank.

3. Business and Commercial:

Taking into recognition that Delhi is the major wholesale commercial and business centre of North-west India, certain areas have been tentatively reserved for planned expansion. Of course, the role of business and commercial activity in the general economy of Delhi region has yet to be studied. Nevertheless, the following recommendations are made in the Interim General Plan

- Connaught Place to remain the principal shopping centre of the metropolis. It is proposed to enlarge this area and to provide facilities for loading and unloading of merchandise and, by a planned net-work of streets, to relieve it of all through traffic. A major link to old Delhi through Jama Masjid area by passing the Minto Road traffic jams is being considered. Also under consideration is the provision for more parking facilities and to rationalise the service industry (motor workshops, printing presses etc.) that is now located in the Connaught Place area on the basis of "performance standards."
- Old city centre to be redeveloped into two distinct parts:
- Commercial and wholesale in Sadar Bazar area; Financial and retail area in Chandni Chowk and its adjoining areas.
- It is suggested to study the nature of business activity in Chandni Chowk and to work out long-range plans for its eventual redevelopment. Chandni Chowk might be redeveloped as a retail and financial centre with properly planned circulation, parking and other facilities and architecturally into a grand promanade between the Red Fort and the Fatehpuri Mosque from where all the vehicular traffic might be excluded. It would be possible to create an Indian Bazar with modern amenities, landscape plazas, side-walk cares and reflecting pools.

Six new community shopping centres are proposed to serve the new residential communities. These are tentatively located at:—

1—North of Old Secretariat,

2—Junction of Shankar Road,

3—Junction of Ring Road and Najafgarh Road,

4—South-west of Vinay Nagar at the Outer Ring Road,

5—North of Kalkaji,

6—East of Jumna river and Shahdara area.

Besides the above tentative locations, certain improvements like off-street parking, loading and unloading facilities and easy access will be made to existing shoping centres.

Neighbourhood shopping has not been shown on the Interim General Plan but would be located on the Comprehensive Plan after detailed study of the needs of the residents living in the neighbourhood.

4. Industrial:

A comprehensive survey of industries and manufacturing will have to be done later to ascertain its relative importance in the economy of the National Capital Region. Also to be considered in this connection would be the possibilities of encouraging the diversification of industrial economy into different types of manufacturing trades suitable to Delhi region.

Detailed recommendations as to the land and space requirements for industry during the next twentyfive years could only be made after this study in the Comprehensive Plan.

In the absence of detailed information on the existing conditions, future trends and types, and land area requirements, only tentative proposals are made aiming to create "planned industrial districts" with certain basic facilities such as railroad and highway access in the following areas:

- Rohtak Road for storage and light industry.
- Najafgarh Road for storage and light industry.
- Okhla for light and medium industry.
- East of Shahdara for medium industry.

1. It will be desirable both in the interest of industry and the city to consider the idea of eventual relocation of factories like the Delhi Cloth Mills, Birla Mills, Ayodya Textile Mills from the already built up congested areas, where there is hardly any room for expansion, to the planned industrial districts outside the residential areas.

2. Detailed investigation should be made to provide space for small scale, non-abnoxious cottage and service industry in selected communities, based on performance standards.

3. It is proposed to relocate the slaughter house and ancillary trades on the south of Rohtak Road in the western corner of the urban area as indicated on the plan.

4. It is strongly recommended to relieve the city from junk yards, which should be relocated outside the residential zones.

5. Four areas are tentatively marked on the plan for the Dairy Farms to relieve the city from the cattles in supplying milk and products to the urban area.

II. *Schools and recreation:*

Education and Recreation necessary to the healthy development of mind and body are functions, which form an important part in a city plan. A sound planning of schools and recreation areas is conducive not only for the preservation of human values but to the progressive development of community as a whole.

The proposals for school and recreational sites presented in the Interim General Plan are limited to a broad concept of the manner in which systematic school planning should be done to achieve the objectives over a twenty to twenty-five year period.

1. Educational and Cultural:

Public responsibility for educating both the young and illiterate adults is the very key stone of a Welfare State. It is a basis principle in school planning that public education should be available for every child, who is not voluntarily cared for by some other system.

In a city like Delhi the need for comprehensive educational planning in relation to the proportion of a school-age children, illiterate adults, places of residents etc., is long due.

1. Actual sites and locations of public schools, adult education centres, colleges and technical education centres, would be determined during the phase of comprehensive planning. In general the following tentative standards have been adopted:

- Nursery schools should be provided wherever possible, in the residential neighbourhood for children of 3 to 5 years with a minimum area of half to one acre, depending upon the size of the nursery.
- Primary school children should not be required to travel more than ½ mile to their school. In congested areas this might be reduced. The school site should not be less than 1·5 acres in addition to 3 acres for play-grounds and other school activities.
- Middle and High Schools should be easily accessible from the residential areas, wherever possible within one mile of every home. The size of the school is a factor depending upon the number of pupils. For a high school of 600 students a site of 2·5 acres is minimum desirable in addition to area for play-grounds and other school activities.

2. It is proposed to enlarge the North Campus of Delhi State University to include the area presently occupied by the Defence Department. Possibility of reserving this campus mainly for post-graduate and Research studies might be explored.

3. A South Campus is proposed at the intersection of Kitchner Road and Outer Ring Road to accommodate colleges in southern area of the urban core. In addition to the convenience it would afford to the students living in that area, it would also encourage decentralisation of educational institutions at present, mainly concentrated in North.

4. The Jamianagar area to be expanded and developed as rural and adult educational centre.

5. A portion of Central Vista in the vicinity of National Stadium may be reserved for a National Convention and Festival Centre. The need for Conference and Conventional facilities in the National Capital is increasing everyday. A planned area for such conferences, conventions and cultural activities with the National Stadium as a focal point could be ideal, and would also give a better architectural form to the Central Vista.

6. The Red Fort and the adjoining area to be maintained and planned as an additional Civic Centre, and to be used for civic receptions and selected cultural activities.

2. Recreation and open spaces:

Any plan meant for the physical development of a community would fail in its purpose if it does not provide facilities for recreation and amusement in which the individual in society may grow healthy in body and spirit. The objective of recreation planning is, not merely the provision of open spaces and parks here and there, but the development of a co-ordinated system of different types of recreational facilities.

In the Delhi of today, there are but a few parks and play-grounds. There is no active recreation programme. The few picnic spots that exist are inadequate and far from meeting the growing need of metropolitan recreation. Children parks are few and there are no tot lots. Even the very few open spaces, particularly in the older parts of the city are becoming scarce everyday. The prices of land go high and the open spaces which should be maintained and reserved as parks and recreation are put to all sorts of undesirable land uses.

Detailed recommendations for the metropolitan recreation system can only be given after proper evaluation of different types of recreational facilities and their relative importance and inter-relationships. However, for the Interim General Plan the following tentative proposals are made:

1. Improvement and Enlargement of existing parks and play-grounds:—

- (i) Queens Gardens should be extended towards the east along Queens Road to an open space in front of Red Fort. The buildings on Queens Road in this section are very dilapidated and blighted. These could be gradually cleared to make space for much needed green area and a link to the existing park.
- (ii) Juma Masjid area should be cleared of junk yards and the plaza to be further widened to form it a part of large open space connecting to the Edward Park, Esplanade Road open space, and finally to the river front recreation area.
- (iii) Nicholson Gardens in Civil Lines area to be enlarged.

- (iv) Ajmal Khan Park in Karol Bagh should be expanded and linked with a strip of open space to the Idgah ultimately connecting it to the Ridge.
- (v) All the existing open spaces in the older section of the city should be maintained as green spaces and intensive land use should not be allowed before the comprehensive re-development schemes are prepared.

2. The following new parks are suggested:—

- (i) Near Coronation Memorial in Civil Lines.
- (ii) North of proposed Karolbagh-Patel Nagar Community shopping centre.
- (iii) North of proposed Najafgarh Community shopping centre.
- (iv) South of proposed Viney Nagar Community shopping centre.
- (v) West of Kailash Colony.
- (vi) North of T. B. Hospital in Shahdara.

3. The Ridge to be preserved as natural green area with planned recreational and picnic facilities.

4. Mehrauli, Qutab Minar and Hauz Khas to be developed for intensive recreation.

5. There is no major recreational centre in the National Capital Region. Fortunately the river front has remained unspoiled from intensive land uses. A multi-purpose scheme for flood control, opening of eastern areas of Jumna for urbanisation and industrialisation, location of the new International Airport and general river front development, is proposed.

The whole river front from Wazirabad in North to Okhla in the south to be developed as a major recreational area. Provisions for the zoological garden, race course, bathing ghats, swimming pools, parks including children tot lots, boating and fishing and open air theatres to be made in this area.

The whole area to be inter-connected by a sytem of parkways and pedestrian walkways. Nearby places like the Red Fort, the Juma Masjid, Kotla Ferozshah, India Gate, Humayun's Tomb and Okhla that are in close proximitiy to this belt would be eventually linked to make a co-ordinated system of open space and recreational system.

6. In order to foster the development of a co-ordinated recreational programme, it is suggested that a Metropolitan Park and Recreation Department be established, to acquire, develop and maintain parks, play-grounds, and other facilities for active and passive recreation. This department could develop the proposed areas in a 20-25 year period and could also collect some revenue on facilities such as, open-air theatres, cycle and auto parking and use of other recreational facilities.

(7) It is further suggested that as a matter of policy, no intensive land use (like Cinemas, Theatres, big Shopping Centres) be permitted before the Comprehensive Plan for the National Capital Region is developed. Only tentative sites may be allotted in very special cases and they should be subject to revision in the light of the detailed plan.

The effectuation of major recommendations of the recreation plan would not be easy or cheap. However, a policy decision has to be taken *now* to reserve and acquire the natural areas for recreational development and to salvage the open space from undesirable land use. Delay would inevitably result in good land being used up for all purposes except recreation and parks. The developing costs later would be much higher. Nevertheless recreation facilities will, in the long run, be an economy for Delhi, rather than a luxury.

A well co-ordinated recreational plan would contribute greatly to the physical health and happiness of the people——an immeasurable, but real value. It would also constitute a major weapon in the fight against blight and slums, and would eventually become a real asset, socially, culturally and economically.

III. Circulation:

The Interim General Plan for Circulation as presented here is primarily a major roads and highways plan, which provides for the safe and efficient movement of people and goods into, about and through the urban area of Delhi.

The Circulation plan is based on the land use pattern of the Interim General Plan whose details have been described in the preceding section. The proposals of the Land Use Plan can become realistic only if they are linked through an integrated net work of circulation. It is the purpose of circulation plan to incorporate and coordinate different recommendations relating to the basic pattern of land use and population distribution. As new traffic-ways are built, and old routes improved right-of-ways, can be established which will be adequate for the forseeable future demand. However, at the interim stage the plan for circulation cannot be taken as something fixed and final. It is a point of departure. It will require continuous observation, study and adaptation to actual development in Delhi, and to new trends and conditions of modern transport.

Major Proposals for Roads and Highways:

The principles on which the Interim General Plan for major roads provide direct access to major residential localities from major work, and highways is based, are to separate traffic by function and to commercial and recreational areas.

The planning problem is to rearrange the existing circulation system and propose new links so as to sort out the present confusion and establish a more logical relationship with various land uses.

For planning purposes the major elements of the circulation plan have been classified as:

National Highway By-pass

Arterials

Sub-arterials

Major roads.

Major Proposals:

1. The existing National Highway By-pass on east of Mathura Road, to be extended towards north of Coronation Memorial to join the Grand Trunk Road and towards south upto 10th mile on Mathura Road. This will lead to by-passing of the urban area completely.

2. Outer Ring Road alignment, under construction to be maintained as such.

3. Inner Ring Road proposed, from Humayun's Tomb, along Lodi Road, through Diplomatic Enclave, along Upper Ridge Road, Faiz Road, Chamelion Road, Pull Bangash, Boulevard Road to National Bye-pass near Kashmere Gate.

4. Inner loop to carry peak hour traffic to work centres, starting from Teliwara, Mondhewala Road, Queen Victoria Road, then along the back sides of Hyderabad, Baroda and Patiala Houses to Mathura Road.

5. Creation of Arterial, sub-arterial, major and local roads with different values, by means of different cross-sections, necessary widening of certain roads, and closing of certain roads for vehicular traffic.

6. Cycle tracks for the exclusive use of cyclists.

7. Creation of a new link for Old Delhi and New Delhi between Minto Bridge and Hardinge Bridge.

8. Change in alignment of Grand Trunk Road towards east of Jumna to By-pass Shahdara development.

9. Creation of an under-pass for Kutab Road under the Ring Railway line near Wellingdon Airport.

10. Construction of a new Rail-*cum*-Road bridge over Jumna River near Humayun's Tomb.

7. *Traffic Proposals*:

In Delhi the present traffic chaos is due to the multiplicity of traffic rather than merely the volume. At the interim stage with minor improvements traffic congestion can be reduced and full capacity from present facilities can be extracted by improved traffic routing, improvement of traffic rules and regulations.

It is suggested that traffic rules and regulations be framed for the movement of different types of traffic in the urban area of Delhi. Traffic laws should clearly indicate the desirable ways in which a vehicle should travel on the roads. Specific rules should be framed for turning, over-taking, stopping and parking for vehicles. Similarly the traffic code should be enunciated for the pedestrians.

For alleviating traffic hazards the Interim General Plan makes following recommendations:

—**adequate street lighting and traffic signals,**

—**provision of pedestrian cross-walks, to be indicated by 'Zebra makings"**

—**improvement of important intersections,**

—**making of lanes,**

—**reservation of certain streets for fast and slow moving traffic,**

—**adequate parking spaces for automobiles, trucks, buses and cycles.**

2. *Public Transit*:

The present D.T.S. routes should be studied and revised where necessary during the Comprehensive Plan stage. Introduction of more routes and buses and special routes to connect outer areas.

Location of central or decentralised bus terminals should be studied in the Comprehensive Plan.

Work hours should be staggered, so that it will not only reduce the load factor of the buses, but also alleviate the traffic congestion on the roads.

3. *Railways*:

● Level crossings at major roads and highways should be eliminated. The crossings at Mathura Road, Qutab Road and Shankar Road should be provided with grade separation.

● The Ring Railway as proposed by the Railway Board should be completed. In this connection the problem of bringing people from the suburbs to their work centres. should be further studied and if possible a system of suburban, railway transport be studied.

The possibility of providing an underground mass transit system will be given due consideration in the Comprehensive Plan. A north-south line from University Campus *via* Old Secretariat, Chandni Chowk, Connaught Place, Central Secretariat and then Mehrauli may provide an efficient and time saving commuting.

● For further development on east of the Jumna river as a new urban centre, a change in the alignment of railway line as well as Grand Trung Road to by-pass Shahdara is proposed.

● In order to provide an access and open the area east of Jumna, it is proposed to construct a rail-*cum*-road bridge on the river somewhere near the Humayun's Tomb.

Airports:

● To cater for the increasing volume of air traffic, a tentative site, for a new International Airport, located to the east of Jumna river has been reserved in the plan. This airport is to be designed for jet aircrafts with parallel runways, instrument landing systems, and equipped with contemporary facilities. Approach zones and glide paths to be especially zoned for low intensity development.

- The Willingdon Airport to be reserved for flying clubs, glider and helicopters.
- The Palam Airport should be developed by the Defence Department primarily for the use of the Indian Air Force, and could serve as secondary airport.
- Provision for a Central Airlines Terminal should be made now, preferably in Connaught Place area between Regal Buildings, and Scindia House. This terminal should provide all transit facilities for air passengers including booking, freight and baggage etc. of all air lines serving Delhi.

IV. *Public Utilities and Services*:

One of the principal features of the Interim General Plan for Greater Delhi, is a plan for augmentation and for further provision of community facilities and services that are provided for the inhabitants of the city by the public, semi-public and other agencies.

The main difficulty that confronts in this connection is the inability of the authorities to meet the increasing demands, largely due to the heavy increase in population in the present decade apart from the influx of refugees since partition.

Water Supply:

In the case of water supply, the problem of enormous increase in demand for filtered water is becoming seriously acute and the authorities feel their inability to meet the increased demand since the capacity of the existing reservoirs is not much to hold adequate quantum of filtered water for the necessary supply.

In this connection the tapping of new sources to supply water to cope with the increasing demand should be envisaged and immediate measures taken so that the calamity of an impending insufficiency of supply may be avoided well before hand. Prevention of wastage from unnecessary use and provision of adequate water supply in the newly developed colonies and in many of the existing refugee colonies are some of the important problems that require immediate solution.

Sewerage:

In the matter of adequate provision of sewer connections all over the city the position is no better. The state of dilapidation and over-flow, inadequate repairs, the combined system of sewerage, partial or complete inoperation are some of the grave shortcomings that are to be tackled in this regard.

Electricity:

Apart from water shortage and lack of adequate provision of other services, the question of shortage of electricity supply has created not very salubrious situations. The comfort of citizens and industrial expansion will have to wait until the various authorities set their houses in order.

The staggering increase in the demand for additional supply of power and the consequent inability to cope with the increasing demand have been the result of not taking the job comprehensively. The Production of towers and power lines has not been effected within the allotted time schedule and the plans for generation of more power, by the setting up of additional power plants has not been taken up.

Under the second five-year plan period, it is envisaged that about 54 villages in Delhi State are to have the blessings of electricity. At present in the context of the acute shortage of power which afflicts the normal domestic and industrial requirements in the urban Delhi, it remains to be seen how far such extension of electrification in the rural area works out to satisfactory result.

Complacency and lack of coordination are the two main drawbacks that must be set right in connection with effecting improvements and extension in the provision of public services and facilities.

CHAPTER IX

IMPLICATIONS FOR FUTURE PLANNING

The scope of urban planning is as vast and complex as the urban living itself. Since the Delhi Region is expanding and enlarging, it is essential to have its growth planned and guided into desirable channels. Planning *has* to be a continuous process in full conformity with the changing pattern and needs of contemporary living. The proposals of the Interim General Plan would remain on paper if there is no machinery to effectuate its major decisions.

In order to transform the major proposals of the plan into reality, and to refine the general recommendations of the Interim Plan into a Comprehensive Plan, an effective "planning framework" is needed. The character of a plan is influenced, not only by its own objectives, but also by the environment in which it must operate and to the available instruments by which it can be carried out.

It was reported during this study that private developers were planning residential developments just outside Delhi State boundaries as that area is beyond the control of the D.D.P.A.

If such developments occur just at the outer periphery of Delhi State, it would create the same problems which are now being faced in Delhi itself. And we would defeat our objective and purpose if we cannot control that growth now.

The following suggestions are therefore made in regard to the planning framework and the tools of implementation that are essential for making physical planning a reality.

I. PLANNING FRAMEWORK

An enabling legislation from the Parliament of India is needed for the creation of a 'planning agency'. This agency may be named as the NATIONAL CAPITAL AREA PLANNING COMMISSION. The Planning Commission should have the planning jurisdiction for the entire National Capital Region as defined from time to time. All the planning schemes in the region should conform to the Comprehensive General Plan evolved by this Commission.

1. This Commission should also have the authority of land acquisition for planning purposes as permitted under the 4th Amendment of the Indian Constitution. Further, the Commission should have the exclusive power to approve, regulate, change, accept or reject "the urban development schemes" by private developers and organizations.
2. The planning jurisdiction of the said Commission should include, at present, not only the entire area of Delhi State, but also the adjacent territories in U.P. and Punjab, which are under the direct influence of the National Capital. These urban areas are namely

Faridabad, Ballabbgarh, Gurgaon and Bahadurgarh in Punjab, and Ghaziabad in Uttar Pradesh.

Moreover, a provision should be made to re-define and enlarge this "planning area" preferably with every census year, if there is such a need. It may be feasible later to prepare a Regional Plan of physical development for an area including Rohtak, Palwal, Panipat and Patudhi in Punjab, and Bulandshahar, Khurja, Hapur and Meerut in U.P.

3. The proposed Planning Commission should be broad-based and well represented. Although it should be representative yet it is to be constituted in a manner as not to be influenced unduly by the "politics of expediency".

It is suggested that the members of the National Capital Area Planning Commission should be appointed by the President of India on the recommendation of the Chief Commissioner who would select the members after due consultation of the local authorities. The Commission may consist of 20 to 50 members, depending upon the number of communities represented and the size of the region. Half of the members should be officials and the other half non-officials. A suggested composition works out as follows:

2 members from Old Delhi Area.

2 members from New Delhi Municipal Area.

1 member from Civil Lines area.

1 member from Delhi Cantonment Board.

5 members, on each from Shahdara, Najafgarh, Narela, Okhla and Mehrauli.

2 members from the rural areas, nominated from the District Boards.

6 members representing the following professions:

1 labour and trade union.

1 from Architecture or Engineering professions.

1 from the local Bar Association.

1 from the field of Education.

1 representative of the private industries, may be nominated by the Chamber of Commerce.

1 from medical profession.

5 members, one each from Faridabad, Gaziabad, Gurgaon, Ballabgarh and Bahadurgarh.

6 *ex-officio* members from Government Departments including Education. C P W D, Railways, Communications and Health.

6 members to be selected from Local Planning Area Councils.

4 members selected from the Parliament of India and other elected bodies, local municipal corporation etc.

TOTAL 46

As this Commission would be a large body, it would be essential to have an Executive Committee of 12 members elected from the Commission including the Director of Planning as the Secretary.

4. To enlist the public co-operation and participation in the evolution of the Comprehensive Plan, it is suggested to have Planning Area Councils. These Planning Area Councils will be organised after a study of the community relationship and social structure in the Comprehensive plan stage.

The Planning Councils will help in the collection of data, acquaint the Commission with the local problems and would be the grass-root contact, so essential for any democratic planning.

II. TOWARDS THE COMPREHENSIVE PLAN

The Town Planning Organisation is preparing a detailed outline of the planning programme which it intends to undertake for the preparation of the Comprehensive Plan. The essence of this programme is as follows:—

1. *Planning Research.*—Population Study, Economic Base Study including the study of the importance of manufacturing in Delhi's economy, study of communities in Delhi and their social and cultural characteristics, preparation of planning standards for future urbanization.

2. *Land Planning.*—Land Use Survey and analysis, Circulation and Traffic, Airport and Recreation plan, Regional and Metropolitan aspects, location of Industries and Commercial Areas.

3. *Urban Redevelopment.*—Studies for slum clearance, urban conservation, renewal and redevelopment, redevelopment schemes in rural areas.

4. *Local and Community Planning.*—Planning of new Residential neighbourhoods, Rural and Village planning, plans for outlying communities.

5. *Planning Administration.*—Preparation of Zoning Ordinances, Sub-division and Architectural Control, revision of Building Code to conform the recommended residential densities, Capital Improvement Planning.

III. METHODS OF EFFECTUATING PLAN

Once a Plan is accepted, it has to be effectuated by various means and methods. The points below describe briefly some of the known practices employed for translating the proposals of a master plan:

1. *Public co-operation and participation.*—

A democracy working for social ends has to base itself on the co-operation' of the people and not on the 'power' of the state. This leads to the application of the principle of public participation in all phases of planning activity

and in all the functions which bring together individuals for the pursuit of common purposes. This help would be enlisted through a network of planning Area Councils which would be committees of people organized from a locality to solve this problem by planning.

2. *Legal Tools.*—The accomplishment of planning objectives require sustained community effort, and even this is truly effective only when proper tools are available. Among the legal tools employed for directing the physical development within the framework of a Plan are:

Zoning,

Sub-divisional Control,

- Architectural Control,

Building Code, and

- Mandatory Referal.

As soon as the plan is accepted in principle, Zoning Regulations could be formulated which would direct the development of recommended land uses in certain sectors and exclude the objectionable and non-conforming land uses from such zones.

Similarly, the Sub-division Control Regulations would enunciate 'standard practices' which should be followed for planning urban development. Architectural Control and Building Code would also help in the same direction to control the densities and the form and design of the structures. The privilege of Mandatory Referal would further give an opportunity to the planners to review the plans and put their opinion on general urban development projects.

3. *Capital Improvement Programme.*—

It is proposed to prepare on the basis of priorities and resources, periodical plans (five year plans) for the physical improvement and development as indicated in the Interim General Plan, and recommended by other public agencies.

The various public improvements like highways, street widening, construction of new public buildings including government housing schemes, and other major public works will be incorporated in the preparation of Capital Improvements Plan.

In this way through planning the improvement on a periodical basis some of the major proposals in the public sector of the Master Plan could be implemented. Moreover, the Capital Improvements Programme would help towards co-ordination of many physical development projects undertaken today by various government departments, and they would thus fit within the general framework of the Master Plan.

The Interim General Plan is not an end in itself, rather it is a point of departure for the preparation of a general Comprehensive Plan for the National Capital Region. Till such a plan is prepared, the Interim Plan shall serve as a pattern against which current proposal and long range objectives may be evaluated.

It is the earnest hope of the Town Planners that the Interim General Plan will succeed in provoking widespread thought on the subject of desirable objectives and policies for the future planning of the National Capital and methods whereby they may be attained.

APPENDICES

APPENDIX I

TABLE I

Land Use-Factual Data

Type of Use	Approx. area in acres	Percentage of the total incorporated areas	Percentage of the actual developed area
I. Residential	13,270	18·9	41·9
(Private—7,730)	(11·0)		
(Govt.—5,540)	(7·9)		
II. Business and Commercial	580	·8	1·8
III. Industrial	3,960	5·6	12·6
(Intensive—1,100)	(1·6)		
(Extensive—2,860)	(4·0)		
IV. Government Offices	1,370	2·0	4·4
V. Educational Institutes and other Public buildings.	4,030	5·7	12·8
VI. Recreational (Public parks and play grounds—1,310	1,490	2·1	4·7
Semi—Public—180)	(1·86) (·26)		
VII. Cantt. and other areas under Defence.	2,830	4·0	9·0
VIII. Railways and Airports	2,500	3·6	7·9
XI. Nurseries and Fruit gardens	1,550	2·2	4·0
TOTAL	31,580	44·9	100·0
X. Agricultural Land	13,500	19·2	..
TOTAL	45,080	64·2	
Total acreage within the incorporated areas	70,290	100·0	
Vacant land	25,210	35·9	
Vacant land including Agricultural land	38,710	55·1	

TABLE 2

Developed Areas within the incorporated Area.

Name of the local Body.	Total area (in acres)	Approx. developed area (in acres)	Percentag of the total area
1. Notified Area Committee	5,180	2,740	52·39%
2. Delhi Municipal Committee	7,420	6,330	85·30%
3. For Notified Area Committee	460	230	50·00%
4. New Delhi Municipal Committee	20,020	13,420	67·30%
5. South Delhi Municipal Committee	13,030	950	7·29%
6. West Delhi Municipal Committee	7,600	1,440	18·94%
7. Notified Area—Cantt. Board	10,700	4,090	38·22%
8. Shahdara Municipal Committee	5,880	830	13·87%
TOTAL	70,290	31,580	44·90%

TABLE 3

Industries in Delhi.

Serial No.	Name of Industry	No. of Factories or Establishments	Capital Investment.	No. of Workers				Productive capacity value in Rupees.	
				Males	Females	Children	Total	Present	Optimum
1	Textile Industry . . .	258	6,50,86,104	18,730	812	167	19,709	60,19,48,000	21,95,02,000
2	Engineering Works . .	503	3,45,05,468	7,311	7	332	7,604	6,82,90,545	2,35,65,288
3	Metal Industry . . .	102	27,17,700	1,208	..	174	1,387	99,85,260	65,02,100
4	Sheet Metal Industry . .	539	45,84,215	2,460	16	814	3,280	1,64,69,570	94,74,110
5	Electrical Goods . .	71	76,77,539	1,176	..	38	1,214	1,34,10,908	66,38,793
6	Ceramics Industry . .	28	37,46,100	1,372	72	37	1,481	53,64,810	32,76,127
7	Chemical Industry . .	111	1,05,62,916	1,610	31	40	1,681	1,56,00,000	1,06,00,578
8	Industries of Food and Drink .	1,143	12,71,79,800	4,803	20	19	5,047	1,12,36,500	57,69,875
9	Miscellaneous Industries . .	323	1,68,56,000	5,806	47	240	6,093	2,97,50,000	1,83,00,000
10	Small Scale Industries . .	348	26,88,790	1,944	38	50	2,032	85,45,900	55,05,600
	GRAND TOTAL .	3,426	16,11,42,812	46,371	1,430	1,911	49,564	76,06,10,494	30,91,34,471

Source : Industrial Survey Report (Delhi State) 1950-51.

TABLE 4

Number of students in Recognised Schools in Delhi State.

Year	Primary Classes including Junior Basic			Middle Classes including Senior basic Senior Middle			High/Higher Secondary			Grand Total
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	
1950	61,526	39,913	1,01,439	26,930	6,210	33,140	10,771	2,184	12,955	1,47,534
1951	68,811	43,229	1,12,040	33,091	8,143	42,234	12,720	2,590	15,310	1,69,584
1952	71,156	48,741	1,19,897	33,973	9,580	43,553	12,464	2,684	15,148	1,78,598
1953	80,336	56,168	1,36,504	40,872	13,140	54,042	13,611	4,438	18,049	2,08,595
1954	84,592	58,235	1,42,827	49,089	15,684	64,773	14,757	4,550	19,307	2,26,907

Data collected on March 31st every year.

Source : Directorate of Education, Delhi State.

TABLE 5

Enrolment in various colleges under Delhi University

S. No.	Name of the College	1949	1950	1951	1952	1953	1954	1955
1	St. Stephen's College	474	485	461	468	475	445	356
2	Hindu College	1,226	1,066	1,057	998	1,032	883	931
3	Ramjas College	692	786	745	774	800	683	712
4	Delhi College	662	964	1,006	1,047	1,128	866	1,018
5	College of Commerce	603	728	691	668	676	687	712
6	Inder Prastha College	560	597	586	695	800	919	981
7	Miranda College	105	390	464	488	542	572	636
8	College of Nursing	..	55	64	71	75	69	80
9	Central Institute of Education	85	86	110	99	80	94	83
10	Hans Raj College	313	392	467	500	557	386	549
11	Central College of Agriculture	1	170	146	122	121	111	119
12	Karori Mal College	..	..	..	498	227	318	439
13	Lady Hardinge Medical College	..	209	244	230	238	218	221
14	S. G. T. B. Khalsa College	..	..	..	50	151	300	373
15	Desh Bandhu College	..	..	..	..	28	181	243
16	School of Social Works	23	53	61	44	46	45	49

17	School of Economics	..	12	22	79	87	140	112
18	Lady Irwin College	..	..	48	73	197	126	156
19	Law College	536	564	774	856	843	865	878
20	Delhi Polytechnic	..	..	..	..	..	375	575
21	Science Faculty	..	..	..	..	..	1,180	1,158
22	Patel Chest Institute	..	..	..	..	15	14	15
	TOTAL (excluding Preparatory classes)	5,279	6,557	7,036	7,760	8,118	9,477	10,304
	TOTAL (including Preparatory classes)	..	7,651	8,311	9,501	10,503	10,990	12,553

NOTE.—The students in the diploma classes are not included in this list. Only the list of degree students is given being under Delhi University.

Source: Annual reports of University of Delhi (1949 to 1955).

TABLE 6

Number of Recognised Schools in Delhi State.

Year	Primary			Middle			High/Higher Secondary			Total		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Grand Total
42—43 .	97	121	218	31	28	59	3	37	40	131	186	317
43—44 .	96	118	214	31	28	59	3	37	40	130	183	313
44—45 .	102	120	222	31	29	60	3	38	41	136	187	323
45—46 .	107	123	230	30	30	60	3	40	43	140	193	333
46—47 .	114	126	240	31	35	66	3	40	43	148	201	349
47—48 .	..	..	248	..	..	61	..	..	45	..	..	354
48—49 .	226	159	385	32	50	82	3	56	59	261	265	526
49—50 .	285	191	476	23	54	77	4	58	62	312	303	615
50—51 .	305	225	530	17	57	74	6	63	69	328	345	673
51—52 .	301	237	538	19	60	79	7	73	80	327	370	697
52—53 .	301	237	538	20	73	93	7	87	94	328	397	725
53—54 .	288	244	532	28	75	103	11	99	110	327	418	745

Source : Directorate of Education, Delhi State.

TABLE 7

Medical Facilities in Delhi

Type	Municipality	Location
A. Maternity and Child Welfare Centres.	Delhi Municipal Committee	Nicholson Road, Chandni Chowk, Dariba, Sarak Prem Narain, Hauz Kazi, Jamma Masjid, Daryaganj, Pahar Ganj, Basti Harphool Singh, Model Basti, Dev Nagar, Subzi Mandi (P. S.) Teliwara, Bagh Kare Khan, Patel Nagar.
	New Delhi Municipal Committee	Lady Hardinge Road, Talkatora Road, Reading Road, Thompson Road, Babar Road, Aurangazeb Road, Jangpura, Lodi Road, Pusa Institute, Purana Kila, Rajindar Nagar, Kitchner Road, Vinay Nagar, Lajpat Nagar.
	Civil Lines Notified Area Committee	Timar Pur, Rajpur, Dhaka, Khyber Pass, Malkaganj.
	West Delhi Municipal Committee	Ramesh Nagar, Moti Nagar, Tilak Nagar, New Tehar.
	South Delhi Municipal Committee	Kalkaji, Malaviya Nagar, Kotla Mubarakpur.
	Delhi-Shahadra	Mehallas Sarai, Shahadra.
	Delhi Cantonement	Nil.
B. Dispensaries (Allopathic)	Delhi Municipal Committee	Govt. quarters, Dev Nagar, Jamma Masjid, Lal Kuan, Lahori Gate, Hamilton Road, Kiahenganj, Birla Mills, Subzi Mandi, Sadar Bazaar, Pahar Ganj (New Bridge), Queens Road, Pahar Ganj (Imperial Cinema) Industrial Area (Najafgarh).
	N. D. M. C.	Parliament St. (P. S.), Purana Quila, Pusa Institute. Central Sectt., Jangpura, Lodi Road, Factory Road, Rajindar Nagar, Panchkuin Road, Lajpatnagar, Talkatora Road.
	Civil Lines Notified Area Committee	Mori gate (near statue), New Police Lines, Kingsway, Kingswaycamp.
	West Delhi Municipal Committee	Moti Nagar, New Tehar.
	Delhi-Shahdara	Kabul Nagar, Shahdara, Chotta Bazaar, Shahdra Jhil Khuranja.
	Delhi Cantonement	Delhi Cantonement, Board Hospital.
(Ayurvedic)	Delhi Municipal Committee	Bazaar Sita Ram, Daryaganj (Golcha Cinema), Shahadra, Katra Khushal Rai, Town Hall, Delhi. Jumna Bazaar, Andha Mughul, Pehari Dhiraj, Pahar Ganj.
	N. D. M. C.	Lady Hardinge Road.
	Civil Lines Notified Area Committee	Nil.
	West Delhi Municipal Committee	Nil.
	South Delhi Municipal Committee	Nil.
	Delhi-Shahadra	Nil.
	Delhi Cantonement	Nil.

(Unani)	Delhi Municipal Committee	Chandni Chowk, Hamilton Road, Phatak Habash Khan, Karol Bagh (Christian Colony).
	New Delhi Municipal Committee	Nil.
	Civil Lines Notified Area Committee	Nil.
	W. D. M. C. and S. D. M. C.	Nil.
	Delhi-Shahadra	Nil.
	Delhi Cantonement	Nil.
C. Health Centres	Delhi Municipal Committee	Patel Nagar, Machliwalan.
	N. D. M. C.	Lajpat Nagar.
	Civil Lines Notified Area Committee	Nil.
	W. D. M. C.	Tilak Nagar and Moti Nagar.
	S. D. M. C.	Kalkaji and Malaviya Nagar.
	Delhi-Shahadra	Nil.
	Delhi Cantonement	Nil.
D. Hospitals	Delhi Municipal Committee	1. Victoria Zenana Hospital, Machliwalan. 2. Shroff's Eye Hospital, Daryaganj. 3. Ramkrishna T. B. Hospital, Karol Bagh. 4. R. S. Jessa Ram Hospital, W E. A., Karol Bagh. 5. Pandit Parma Nand Eye Hospital, Original Road, Karol Bagh. 6. Unani and Ayurvedic Hospital, Tibbia College, Karol Bagh. 7. Municipal Ayurvedic Hospital, Billimaran.
	New Delhi Municipal Committee	1. Irwin Hospital, Circular Road, New Delhi. 2. Girdhari Lal Maternity Hospital, Circular Road, New Delhi. 3. Safdarjang Annexe Hospital, New Delhi. 4. Wellington Hospital and Nursing Home, Talkatora Road. 5. Sir Ganga Ram Hospital, Rajindar Nagar. 6. Blind Hospital, Lajpat Nagar.
	Civil Lines Notified Area Committee	1. Hindu Rao Hospital, Hindu Rao Bridge. 2. Police Hospital, Civil Lines, Rajpur Road. 3. St. Stephen's Hospital, Tis Hazari. 4. Silver Jubilee T. B. Hospital, Kingsway. 5. Balak Ram Hospital, Timarpur. 6. Infectious Diseases Hospital, Kingsway. 7. Hudson Lines Maternity Hospital, Kingsway, 8. Poor House Hospital, Kingsway.
	W. D. M. C.	Nil.
	S. D. M. C.	Banarsidas Chandiwalan Eye Hospital, Kalkaji.
	Delhi-Shahadra	Nil.
	Delhi Cantonement	1. Delhi Cantt. Board Hospital. 2. Military Hospital, Delhi Cantt.

TABLE 8

Distribution of Police Stations within Urban Delhi

Municipality	Existing		Proposed *	
	Police Stations	Police Post	Police Stations	Police Post
1. New Delhi	1. Parliament Street. 2. Hardinge Avenue. 3. Reading Road	(i) Pusa Institute. (ii) Rajinder Nagar.		
	4. Tughlak Road	(i) Roberts Road. (ii) Nizamuddin. (iii) Lodi Road. (iv) Viney Nagar. (v) Diplomatic Enclave (Chanakiya Puri).		(vi) New Delhi Police Lines.
2. Delhi	1. Lahori Gate. 2. Faiz Bazaar	(i) Jumma Masjid. (ii) Turkman Gate. (iii) Hardinge Bridge.		
	3. Sadar Bazaar. 4. Hauz Kazi. 5. Karol Bagh	(i) Model Basti. (ii) Government quarters.		
	6. Pahar Ganj 7. Subzi Mandi.	(i) Motia Khan.		(iii) Western Extension Area.
				(i) Serai Rohilla. (ii) Andha Mughal. (iii) Bharat Nagar. (iv) Cakar Nagar. (v) Kamla Nagar.
	8. Roshanara Road. 9. Kashmere Gate 10. Patel Nagar.	(i) Nigambodh Ghat		

3. Notified Area Committee.	1. Rajpur Road	(i) Police Lines, Rajpur Road.	
		(ii) New Police Lines, Kingsway Camp.	
	2. Civil Lines	(i) Timar pur.	
4. West Delhi Municipal Committee.	1. Moti Nagar	(i) Tilak Nagar.	
5. South Delhi Municipal Committee	1. Lajpat Nagar	(i) Kotla Mubarakpur. (ii) Malavia Nagar.	(i) Medical Institute. (ii) Defence Colony. (iii) Hauz Khas Enclave. (iv) Kailash.
6. Cantonment	1. Delhi Cant.	(i) Dhorla Kuan. (ii) Palam.	
7. Sahadara Municipal Committee.	1. Shahdara	(i) Gandhi Nagar. (ii) Shahdara City. (iii) Dilshad Gardens.	

*Proposed by the Police Department.

Source : Superintendent, Police Head Quarters, Kashmere Gate

TABLE 9

Location of Post Offices in urban Delhi

Zone No.	Zone Name	Name of the Post Office Area
1	New Delhi	1. New Delhi H.O.
		2. Amrit Kaur Market.
		3. Connaught Place.
		4. Constitution House.
		5. Eastern Court.
		6. Kamala Market.
		7. Kotla Ferozshah.
		8. Matapan Lines.
		9. Minto Road.
		10. Multani Dhanda.
		11. Pahar Ganj.
		12. Purana Kila.
		13. Queensway.
		14. Hardinge Bridge.
2	Central Secretariat	15. Gymkhana Club.
		16. Kitchner Road.
		17. Parliament House.
		18. Raisina Road.
		19. Raisina Secretariat North.
		20. Secretariat South.
		21. Shahjahan Road.
		22. South Avenue.
		23. Talkatora Road.
3	Lodi Road	24. Lodi Road.
		25. Khan Market.
		26. Kotla Mubarakpur.
		27. Viney Nagar.
		28. Willingdon Airport.
4	Rashtrapati Bhawan	29. Rashtrapati Bhawan.
5	Karol Bagh	30. Karol Bagh.
		31. Anand Nagar.
		32. Anand Parbat.
		33. Arya Samaj Road.
		34. Dev Nagar.
		35. Dr. Joshi Road.
		36. Lower Camp Anand Parbat.
		37. Original Road.
		38. Rajindar Nagar.

Zone No.	Zone Name	Name of the Post Office Area
6	Delhi	39. Delhi G.P.O. 40. Andha Mughal. 41. Bara Tuti. 42. Birla Line. 43. Chandni Chowk. 44. Dariba. 45. Delhi Cloth Mills. 46. Delhi Kashmere Gate. 47. Delhi Sadar Bazar. 48. Fruit Market (Subzi Mandi). 49. Hamdard Dwakhana. 50. Hauz Kazi. 51. Hindustani Dawakhana. 52. Idgah Road. 53. Jawahar Nagar. 54. Kamla Nagar. 55. Lajpat Rai Market. 56. Mori Gate. 57. National Public Library. 58. Railway Clearing Accounts Offic 59. Red Fort. 60. Roshanara Road. 61. Sabzi Mandi. 62. Sarai Rohilla. 63. Sewa Sangh. 64. Tis Hazari. 65. Sadar Thana Road.
7	Darya Ganj	66. Ansari Road. 67. Darya Ganj. 68. Jumma Masjid.
8	Civil Lines	69. Civil Lines. 70. Delhi University. 71. Maidens Hotel. 72. Publication Office. 73. Timarpur. 74. Shakti Nagar.
9	Kingsway	75. Kingsway.
10	Delhi Cantonement	76. Delhi Cantonement. 77. Bazar Road Delhi. 78. Palam Air Port. 79. Station Road. 80. No. 3 Wing P. O. 81. C.O.D. Delhi Cantonement.

Zone No.	Zone Name	Name of the Post Office Area
11	New Delhi DHQ.	82. New Delhi DHQ.
12	Agricultural Research Institute	83. Agricultural Research Instt. 84. Central Tractor Organisation. 85. National Physical Laboratory. 86. Patel Nagar East. 87. Patel Nagar West.
13	Hazrat Nizamuddin	88. Hazrat Nizamuddin- Jangpura. 89. Jangpura. 90. Lajpat Nagar.
14	Delhi Industrial Area	91. Delhi Industrial Area. 92. Rajouri Gardens. 93. Moti Nagar.
15	Malviya Nagar	94. Malviya Nagar.
16	Yusuf Sarai	95. Yusuf Sarai.
17	Tilak Nagar	96. Tilak Nagar. 97. Tihar.
18	Kalkaji	98. Kalkaji.

Surce : Post Master General.

APPENDIX II-A

PART I

Extracts from the background literature of the Greater Delhi Socio-Economic Survey that is being done by the Delhi School of Economics in accordance with the Research Programme Committee of the Planning Commission :

"The Delhi School of Economics has undertaken to conduct a survey of socio-economic conditions in the Greater Delhi City with a view to studying the problems arising out of rapid urbanisation. It will make available valuable data which are necessary for analysis of the process of rural urban migration in terms of socio-economic factors and will indicate nature, extent and intensity of the many pressing problems faced by the city and its expanding population. This survey is one of the series which the Research Programme Committee of the Planning Commission has sponsored in the major cities of India.

* * * * *

"The information collected from households will indicate details of immigration, occupation and income of each of the employed members and information about the unemployed members of these families. It will also collect data on housing conditions, on health and nutrition and on social and cultural interests and activities of individuals.

A survey of industrial, commercial, transport and other productive establishments will be made with a view to obtain information on their present position and development potentialities including in particular the employment aspect. A series of studies on specific problems of city life such as education, over-crowding and slums, sanitation and water supply, milk supply and transport will also be undertaken. The data thus obtained will be subjected to expert statistical analysis, on the completion of which the report on the results will be submitted to the Planning Commission.

In order to gain experience the Section conducted a Pilot Survey of socio-economic conditions in the Greater Delhi City in different localities. More than 12,000 families in 14 areas were enumerated, and from this list of households about 600 samples were chosen at random for detailed house-holds investigations. For the purpose of Pilot Survey, the Greater Delhi Survey Section of the Delhi School of Economics engaged 35 honorary research investigators, most of them were post-graduate students.

On the basis of experience gained in the Pilot Survey the programme for the main survey has now been finalised. The work of collecting data for the survey is spread over a period of three years. The first year will cover the Old Delhi City—Delhi Municipal Committee wards I to XI, Civil Lines and the four outlying towns. The second will cover the remaining 9 (XIX to XX) wards of the Delhi Municipal Committee and the third will cover New Delhi, South and West Delhi Municipalities and Delhi Cantonment."

* * * * *

"The census of India 1951 which sounded the alarm against the dangers of improvident maternity revealed it too, that population was increasing at a much faster rate in cities than in villages. Total population of our country rose in the decade 1941-50 by 13 per cent, of the villages by 9 per cent and of the towns and cities by 41 per cent. All the major cities registered increases : Greater Bombay of 67 per cent, Madras of 82 per cent and Greater Delhi of 107 per cent.

In cities population increased at a faster rate than the rate of net reproduction, given by the excess of birth over deaths ; clearly people had gone over in large numbers from the rural to urban areas. Though, it is indeed true that for the villages the corresponding rate of emigration proved much too inadequate to prevent further growth of rural population. In any case the disparity in the rates of population growth between the rural and urban sectors of the country was very conspicuous and its net effect has been to raise the proportion of urban population in the total from 13·8 per cent in 1941 to 17·4 per cent in 1951. In other words, of the expanded population of 1951 a larger section came to lead or live a city life. Through this decade there operated so to say a process of urbanisation. Since 1951, the process has evidently continued and is in all probability gathering further momentum.

What is the significance of this process of urbanisation for the economy and for its urban and rural sectors? Urbanisation as such cannot be considered as undesirable; not so indeed in the present context of our economy. In view of the excessive preponderance therein of agriculture, of excessive numerical pressure of the people on the limited land resources it may even be considered to provide a positive gain. Yet, the experience so far is very disquieting. The process appears to have given rise to a number of social and economic problems which with the passage of time have grown very acute. Our cities today are congested; living conditions have deteriorated greatly and employment opportunities have tended to grow more and more scares. Further, the points of evidence to suggest the emgiration from the villages has helped our rural economy at best, aggravation of the numerical pressure on land has been a little slower but the fear is that it has tended to induce an unhealthy change in the demographic structure of our rural society. Such consequences of this process cannot be viewed with equanimity and we are left with the view that they were so damaging because the process had gone on without any purposive interference of the state, without any direction or planning, in a spontaneous and uncontrolled manner.

Further consideration of the process would suggest that it is more or less unavoidable The economic development which we wish to carry out with all possible speed involves of necessity a rapid industrialisation and this invitable leads to the growth of urban populations. The process has to con tinue and we may indeed deem its continuance desirable till our economy attains, say, a balaneed structure, till we build up healthy, efficient and equitable relationships between the rural and urban and between the agricultural and industrial sectors of our economy.

But it is ovious that we cannot permit its continuance in the same old way. Further aggravation of the problems that already are unbearably acute has to be prevented. And so we are forced to consider whether it is possible to influence the process so as to conform it to any defined predetermined objectives. Can we so manoeuvre that urbanisation occurs in a manner consistent with planned social and economic development ? To what extent can we do so ? To what extent and in what manner have we do adjust our programmes of industrialisation so as to avoid undesirable consequences, both social and economic of urbanisation?

Correct answers to these questions can be given only if we acquire full knowledge of what has been happening so far. We have to investigate the causes and consequences of urbanisation and so of rural urban migration that has been taking place since the beginning of the last world war. What have been the causes which have forced people to leave rural areas and/or which have attracted them towards the cities? Then we have to investigate the nature, extent and intensity of the many problems that we face in the cities, with respect to conditions of living and the means of livelihood ; and also to know what have been the effects of the said process of rural-urban migration on the social and economic life of villages.

With the objective of getting correct answers to such pertinent questions the Research Programmes Committee has sponsored a series of comprehensive and intensive surveys in all the major cities of India. The Greater Delhi Survey is one of them. It is assigned to the Delhi School of Economics—to us in this section. Let us accept it as a privilege and also as a great responsibility and acquire full understanding of the specific job which as field investigators we shall endeavour to accomplish in the best possible manner.

We have called our survey 'The Greater Delhi Survey'. We include therein practically all the urban areas of Delhi State : *viz.* Old Delhi City ; Delhi Civil Station (Civil Lines) ; New Delhi ; jurisdictions of the newly created South and West Delhi Municipalities ; Delhi Cantonment (Civil) ; Shahdara ; town areas of Mahrauli, Najafgarh and Narela. In the aggregate they account for an urban (inhabited) area of over 80 sq. miles. Our operations will extend, thus, from Narela in the North to Mahrauli in the South over 25 miles ; and from Shahdara in the East to Najafgarh in the west over nearly 20 miles.

Then 1951 census calculated 14·4 lakhs of urban population for the Delhi State ; a recent estimate puts it aproximately at 16·5 lakhs as at the end of 1954. Back in 1941, the urban population of the Delhi Province was only 7 lakhs; area than was similar. This shows that in the last 14 years there has been an increase of 136 per cent in the urban population of Delhi State. This increase was in continuation of the long term rising trend; but it is evident that since 1941 the trend gathered a great momentum for in the decade proceeding this 14 years period, the rise was only 55 per cent. Since 1941 the process of urbanisation has been very rapid indeed. Further, this growth of population is accounted or by the natural process very inadequately. Of the 107 per cent increase in the decade

1941-50 only 24 per cent account for natural increase *i.e.*, excess of births over deaths ; 83 per cent remain to represent net immigration into the urban areas of Delhi State. This high percentage of immigration is explained broadly by two general factors (1) the Second World War and the consequent rise in the tempo of economic and industrial activity and (2) influx of displaced persons in 1947-48. There is yet another apparent reason which draws people to Delhi from all the different parts of our country; and this, as is all too well-known, is the fact of Delhi being the Capital of India and the seat of the Central Government. This fact explains, also why besides the main languages—Hindi, Urdu and Punjabi, we come across here people speaking all the different languages of our country. It further explains why half the population depends for livelihood on service—public or private.

Thus the scope of our survey covers 90 sq. miles of urban area having a population of over 16·5 lakhs. We shall investigate into the causes of immigration that has caused this population to rise to this high figure, and also into the living and employment conditions under which they live. Our investigations will be carried out separately in four parts as follows :

I. An area survey of different localities with a view to ascertaining the present position of community facilities and services. We will also collect all available historical data in order to obtain an idea of their development since 1940.

II. A survey of small shops and commercial establishments. This is designed to reveal their development since 1940, their present status and further potentialities of development. This would give us an idea of the present level of employment in this sector as also of employment opportunities that its probable expansion might create.

We are not including in our scope of field investigation the large scale organised industries because fairly reliable data on them are available from official sources.

III. A series of studies of the specific problems of city life *i.e.* education, transport, over-crowding and slums, milk supply, etc.

IV. A sample survey of households. This will be the most comprehensive and intensive inquiry into the living conditions and the means of livelihood of the poeple. It is designed to give a clear idea of the composition of population as between original residents and immigrants, of the course of immigration into Delhi over the last 14 years, as also of the present employment situation in Delhi. This is the biggest of our jobs. It is, by far, the most important part of the whole inquiry, and it is with this that we, as field investigators, will be concerned.

PART II

Densities in the various Localities of Delhi

[Assumptions in calculating densities :

1. Each family on an average consists of five members.
2. Each single story house contains 1-1/2 families on an average and a double storey house have three families (as per existing conditions), leaving few exceptions.]

Sl. No.	Name of Constituency	Total area (acres)	Built up area (acres)	Total No. of houses	Population 1951	Gross Density per acre	Net Density per acre
1	2	3	4	5	6	7	8
1	Kashmere Gate	270·8	67·5	2,361	20181	74	299
2	Mori Gate	51·6	46·5	1,962	23390	453	503
3	Chandni Chowk	98·8	56·3	1,746	15103	152	268
4	Katra Neel	62·0	46·6	2,372	18735	202	403
5	Shardhanand Bazar	87·2	65·6	2,234	18426	211	480
6	Jama masjid dareeba	60·0	21·0	3,034	23687	394	1128
7	Maliwara	36·0	34·2	2,850	21722	603	635
8	Charkhewalan	48·4	45·98	2,587	20107	415	437
9	Ballimaran	47·6	45·22	3,410	23513	493	520
10	Naya Bans	60·0	41·0	2,177	28664	311	445
11	Frash Khana	49·2	41·8	2,399	19124	388	457
12	Kucha Pati Ram	63·6	38·0	2,016	24205	380	639
13	Kucha Pandit	92·8	44·45	1,618	12928	139	291
14	Kalan Masjid	47·6	28·4	1,402	15502	326	545
15	Lal Darwaza	36·6	34·2	1,664	16105	440	470
16	Churiwalan	38·0	36·1	2,232	15658	412	433
17	Matia Mahal	94·4	63·4	2,871	21154	224	333
18	Darya Ganj	146·6	94·0	843	14946	101	159
9	Chatta Lal Mian	47·6	29·0	1,725	17164	260	613
20	Suiwalan	68·0	48·6	2,126	10014	294	412
21	Roshanara Extension	282·8	67·8	2,777	24312	85	358
22	Kamla Jawahar Nagar	232·8	93·0	2,405	24005	103	258
23	Sohanganj Kothishora	29·2	27·42	2,270	24672	845	900
24	Arya Pura	76·8	61·6	1,641	17557	228	285
25	Bahat Ganj	36·6	28·5	1,105	11168	305	392
26	Bara Hindu Rao	149·2	51·3	2,776	26588	178	518
27	Pul Bangash	52·8	43·82	2,448	15397	291	391
28	Teliwaran Tokriwalan	47·6	36·6	1,887	17706	372	483
29	Deputy Ganj	58·8	48·6	2,881	17036	290	350

Sl. No.	Name of Constituency	Total area (acres)	Built up area (acres)	Total No. of houses	Population 1951	Gross Density per acre	Net Density per acre
1	2	3	4	5	6	7	8
30	Pahari Dhiraj	40·8	34·2	2,909	15718	385	459
31	Model Basti	58·4	44·6	1,285	14210	243	318
32	Manakpura	92·0	66·3	2,228	19416	211	291
33	Qusabpura	102·2	68·0	2,531	21149	207	311
34	Basti Julahan	43·6	35·15	2,398	16356	375	465
35	Ram Nagar	136·4	72·0	2,905	30245	221	420
36	Qadam Shariff	85·6	61·8	1,771	20027	234	324
37	Motia Khan	163·2	98·2	1,238	17494	107	177
38	Dariba Pan (Pahar Ganj)	22·0	19·0	1,046	8505	386	447
39	Mantola (Pahar Ganj)	30·8	27·55	1,666	17501	568	635
40	Gurgaon Road	32·0	30·4	1,365	15254	476	501
41	Chuna Mandi	52·0	45·2	1,748	18084	348	399
42	Kajur Road	156·4	93·8	1,712	24607	157	262
43	Tibbia College	156·4	95·4	1,508	20489	131	214
44	Kishen Ganj	258·4	154·4	2,531	24312	94	157
45	Dev Nagar	115·2	87·2	1,409	25346	220	291
46	Ragarpura	92·0	69·0	3,308	26600	290	355
47	Pusa Road	300·0	165·0	1,461	20550		
		4413·8	2655·59	98,928	914632		
	Colonies						
1	Rajouri	207·0	182·4		15030	72·6	82·4
2	Kailash	55·0	34·1		2460	44·8	72·1
3	Golf Link	62·0	33·9		3165	51·0	93·3
4	Hauz Khas	80·0	42·5		5655	70·6	133·1
5	Wellesly Road Flats	31·0	24·3		1780	57·4	73·25
6	West Patel Nagar	150·0	114·4		16440	108·7	143·71
7	Ramesh Nagar	175·0	72·6		22240	132·8	306·34
8	Vinay Nagar	325·6	211·2		24830	76·26	117·57
9	Vijay Nagar	55·8	20·44		7600	136·2	371·82
10	Pandara Road Flats	21·54	14·48		990	46·4	68·37
11	Tihar (East & West)	180·0			10680		
12	Shanti Nagar	38·0	13·95		2764	72·7	198·14
13	Diplomatic Enclave (South)	160·0	71·6		9820	61·3	137·15
14	Diplomatic Enclave (Private)	118·0	57·60		4290	36·3	74·48
15	Diplomatic Enclave (Embassy)	542·0					
16	Kakanagar	40·0	22·10		900	22·5	40·72
17	Medical Enclave	195·0	116·5		19340	98·68	166·0

PART III

Extract from National Sample Survey (No. 4) Special Report of personnel in the Live Register of the Delhi Employment Exchange

Main Conclusions :

3·0 The principal features brought out by the survey are summarised below :

3·1. *Number on 'Live Register'.*—At the end of August there were 20,911 persons on the Live Register of the Delhi Employment Exchange, of which 1213 were women. The results are based on the information collected in the survey relating to 712 persons out of a sample of 800 from this population ; the remaining 88 could not be traced or contacted for various reasons, such as wrong address, registrant having left Delhi. Only 3 persons (less than 0·4% of the total sample) refused to co-operate and to answer the querries.

3·2. *Group Categories.*—The composition of the Live Register in terms of the various category classifications adopted in the Employment Exchange was as follows : clerical 44%, (freshers 31%, others 13%), unskilled 30% (unskilled office workers 16,%, other unskilled 14%), technical 14% "appointment branch standard" (*i.e.* those with superior technical professional or educational qualifications) 3%, educational 2%, all other men 1% and women 6%.

3·3. *Age.*—75% men and 63% women were aged 25 years or below. Practically whose of the clerical fresher category was included in this age group. Among the 'technical', 'educational' and 'unskilled (office)' categories more than three-fourths came within the same age group. 25% women and only 12% men were above 30 years of age. Among unemployed men on the live Register 8% were aged 17 years or below, 73 % belonged to age group 18-24 years and only 9% were 31 years and above of age.

3·4. *National Status.*—55% men and 50% women on the Live Register were unmarried.

3·5. *Education.*—14% of the registrants had either no education or had read upto primary standard, 26% completed primary or middle stage. 44% were matriculates 5% intermediates and 10% graduates and post-graduates. This proportion naturally varied from one category to another. Among the unemployed, 30% had education standard middle or below, 53% were matriculates and 17% undergraduates and graduates.

3·6. *Migration.*—14% registants were local people, 19% had migrated from rural areas, 14% from urban areas and 45% from territories now included in Pakistan. (Migrants from Pakistan would not all strictly come under the official definition of displaced persons). About 31% men and 8% women among migrants gave un-employment as the reason for their migration.

3·7. *Economic Status.*—33% men and 15% women on the Live Register were 'earners' and another 4% men and 9% women earning dependents. Only 63% men and 76% women were unemployed. For both men and women combined, 36% represented earners and earning dependents and 64% non-earning dependents. More than a third of the employees were engaged in government service. Only 29% of those on the Live Register has some employment in the past but were without employment at the time of the survey.

3·8. *Dutration of unemployment.*—Among the unemployed, 22% were without employment for a period of 3 months and less 30% for a period of 3 to 6 months, 14% between 6 months to one year and 34% above one year.

3·9. *Unemployed freshers.*—53% of all the unemployed men and 63% of the unemployed women were seeking jobs for the first time.

3·10. *Employment sought.*—58% men and 26% women were seeking administrative or clerical jobs; 16% men and 67% women were looking out for other non-manual work.

3·11. *Technical or Professional Qualifications.*—54% of the unemployed had no technical or professional qualification (and in the 'non-technical qualification' group are included 43% of the matriculates and 57% of the undergraduates and graduates). 28% have profession or technical skill without any degree or diploma, and 18% appeared to have some professional or technical degree or diploma.

3·12. *Income expectation.*—3% of the unemployed were prepared to work on emoluments of Rs. 50 p.m. or less, 16% on Rs. 75 p.m. or less, 49% on Rs. 100 p.m. or less, 93% on Rs. 150 p.m. or less, 97% on 200 p.m. or less and only 3% expected an income exceeding Rs. 200 p.m. The average income expected was Rs. 109 p.m.

3·13. *Income of the employed.*—As already stated slightly more than one-third of all the registrants were employed. But 73 % of them had income Rs. 100 p.m. or less, 18% between Rs. 101—150 and only 9% above Rs. 150 p.m.

3·14. *Duration of Employment.*—41 % of the employed had been in employment for more than one year and 48% had been employment for less than six months.

3·15. *Willingness to work.*—Generally women were not inclined to accept any manual work, but 37% of them were willing to go to the villages as teachers. Not more than one-fifth of the men who responded were agreeable to take up manual work in towns or villages, but 47% of them were prepared to go as village teachers and 55% a rural extension workers.

3·16. *Training desired.*—Teacher's training was most popular both among men and women. Two-third of the women who responded preferred teacher's training; training as telegraph or telephone operator was next in popularity among women and one-fifth of them desired it. One-fourth of all men who responded desired teacher's training ; apart from the 'educational' category such training was also most popular among the 'clerical' categories. Training as technician, engineers, and electricians were next in popularity among them.

PART IV

A Note of the Estimates of Delhi State Population for the Year 1971.

The problem of estimating population of Delhi State has got its own interest and peculiarities. Firstly, there were abnormal changes during the partition period, owing to the heavy influx of refugees. A study of the graph showing the growth of population indicates that the population is increasing at an increasing rate, which is technically termed as 'Young Population'. Since there is a continuous migration from other States in India into this State, the population forecasts should be made with a certain amount of caution. It should be noted that the forecasts are reasonably valid for short-term projection only. Four methods were used in getting the forecasts. The first three are purely of a statistical nature and the last one is dependent on current birth and death rates.

METHOD I

The logistic curve fitted by the graphical method, and the growth of the refugee population was separately worked out. The fitted curve is (where Y gives the population in thousands).

$$Y - 345 = \frac{4376}{101 \cdot 7961 - 0 \cdot 324t}$$

This gives the reasonable upper limit of Delhi State population as 4721 thousands at any time but for partition.

METHOD II

The population figures were plotted on semilogarithmic paper and it was noted that the points are scattered round a straight into very closely and this was used for population forecasts. This is the same as fitting an expotential type of curve to the data.

METHOD III

This method is same as method II. But the population forecasts are made separately for rural and urban areas independently of each other.

N.B.—In all the above three statistical methods, the study of normal trend has been made by correcting the 1951 population figures (*i.e.* substracting the refugee influx) and in the forecasts allowance has been made for refugee population growth also.

METHOD IV

This depends purely on current birth and death rates. Forecasts have been making alllowance for a steady immigration into this state.

Statement showing the Population Figures for 1971.

Method I	Method II	Method III	Method IV	Method V
35·85 lakhs	32·29 lakhs	32·73 lakhs	29·70 lakhs	32·26 lakhs

N.B.—

(1) Method V was worked out by the Registrar General.

(2) Method II gave the best fit and hence has been taken as our estimate.

(3) 29·70 lakhs can be taken as the lower limit and 35·85 lakhs can be taken as the upper limit for the population of Delhi for 1971.

APPENDIX II-B

Estimates of Population for Delhi State for the years 1961, '71, '81

Available Data.—The population figures of the State for years 1891, 1901, 1911, 1921, 1931, 1941 and 1951 are available. It is seen from these figures that the growth of population during the years 1891-1921 is very small. From 1921 onwards there is a steady increase with an abnormal increase during the years 1941-1951. The main cause for this is the heavy influx of refugee population. The available statistics show that the refugee population in the State was 4,95,391.

TABLE I

Year	Population	Percentage of increase
1891	3,73,136.	..
1901	4,05,819	9
1911	4,13,851	2
1921	4,88,452	18
1931	6,36,246	30
1941	9,17,939	44
1951	17,44,072	90

An idea as to what the population of Delhi would have been at 1951, if there were no partition is given by substracting the refugee population from the actual population *i.e.* 17,44,072—4,95,392 = 12,48,680.

Problem of estimation.—The usual procedure adopted for estimation of population is fitting logistic curve to the available data. The logistic curve is—

$$Y = \frac{K}{1 + be^{-at}}$$

This has been worked out in Appendix II-A.

We shall assume that the rate of growth of the population at any time is proportional to the population at that time *i.e.*

$$\frac{dp}{dt} = K P \text{ where K is constant.}$$

or $\log P = Kt + \text{constant}$ (by integration)
or $\log P = A + bt$ (where a and b are constants)

and also $\frac{d \log P}{dt} =$

i.e. the rate of increase of the logarithm of the population is constant. So we take logrithms instead of actual population figures and fit the line by 'Least Squares'. Firstly, a line was fitted (on semi-logrithmic scale) for the following data :—

TABLE II

Year	Population	Logarithm to base 10
1921	4,88,452	5·6888
1931	6,36,246	5·8036
1941	9,17,939	5·9628
	12,48,681	6·0962

For computational convenience, I have used t-*Particular year 1921* instead of actual years. The fitted line has the equation

$$\log_{10} P = 5{\cdot}6807 + 0{\cdot}1381t \quad \text{and} \quad \frac{d \log p}{dt} = 0{\cdot}1381$$

The goodness of fit can be sent by comparing the estimates for the years 1921, 1931, 1941 and 1951 with the actual figures.

TABLE III

Year	True Population	Estimate
1921	4,88,452	4,79,400
1931	6,36,246	6,58,900
1941	9,17,939	9,05,500
1951	12,48,681	12,16,000

Population projection.—Projection was made on the assumption that the rate of increase of Log P for the refugee population is the same as for the rest of the population i.e., is equal to 0·1381 per decade. The estimates for the years 1961, 1971 and 1981 are as follows :—

Year	Estimated Population in millions
1961	2·36
1971	3·29
1981	4·52

These estimates can be compared with that given by the Registrar General.

TABLE IV

Year	Estimate of Population	Estimates given by the Registrar-General in millions.
1961	2·36	2·37
1971	3·29	3·26
1981	4·52	4·46

APPENDIX II

PART V-A

Population (Estimates) according to livelihood categories in Delhi State 1971.

Livelihood Category	Population in lakhs	Percentage of total population
I. *Agricultural*		
(*a*) Cultivators of land wholly or mainly owned and their dependents	2·277	6·9
(*b*) Cultivators of land wholly or mainly not owned and their dependents	0·330	1·0
(*c*) Cultivating labourers and their dependents	0·561	1·7
(*d*) Non-cultivating owners of land	0·132	0·4
SUB TOTAL	3·300	10·0
II. *Non-Agricultural*		
(*a*) Production other than cultivation	5·709	17·3
(*b*) Commerce	7·458	22·6
(*c*) Transport	1·815	5·5
(*d*) Other services and miscellaneous sources	14·718	44·6
SUB TOTAL	29·700	90·0
GRAND TOTAL	33·000	100·0

N.B.—The estimate of population for 1971 was taken as 33 lakhs.

APPENDIX II

PART V-B

Population Estimates according to livelihood categories in Delhi State 1981.

Livelihood Categories	Population in Lakhs	Percentage of total population
I. *Agricultural*		
(*a*) Cultivators of land wholly or mainly owned and their dependents	3·105	6·9
(*b*) Cultivators of land wholly or mainly not owned and their dependents	0·450	1·0
(*c*) Cultivating labourers and their dependants	0·765	1·7
(*d*) Non-cultivating owners of land and their dependants	1·180	0·4
SUB TOTAL	4·500	10·0
II. *Non-Agricultural*		
(*a*) Production other than cultivation	7·785	17·3
(*b*) Commerce	10·170	22·6
(*c*) Transport	2·475	5·5
(*d*) Other services	20·070	44·6
SUB TOTAL	40·500	90·0
GRAND TOTAL	45·000	100·0

N.B.—The estimates of the population for the year 1981 was taken as 45 lakhs.

APPENDIX II
PART VI

Population of India — Future Projection

Year	Growth of Population (Past actuals since 1891) Population in lakhs	Increase during preceding 10 years	Year	Growth of Population (Minimal estimates upto 1981) Population in lakhs	Increase during preceding 10 years
1891	2,384	..	1951	3,613	445
1901	2,384	..	1961	4,078	465
1911	2,522	138	1971	4,527	449
1921	2,514	Decrease	981	5,157	630
1931	2,791	277			
1941	3,168	377			
1951	3,613	445			

The above table is taken from 'Census of India, 1951'.

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BY

T.A. Gopalaswami, I.C.S.,
Registrar General of India,
and Ex-officio Census Commissioner for India.

The above forecase is based on the following assumptions :

1. Apart from the disappearance of child marriages, there will be no material change in material or conjugal habits; married women of the same number and the same age will be giving the same approximately the same number of children each of the thirty years 1921—1950.

2. The mortality rates in every age group will be approximately the same during each of the next thirty years 1951-1980 as on an average of the thirty years 1921-1950

PART VII

Estimates of Population for the year 1971

Urban.—The population figures for the Delhi Urban Area for the years 1921 to 1951 are as follows :—

Year	Population
1921	3,04,420
1931	4,47,442
1941	6,95,686
1951	14,37,134

To study the natural trend, the population for 1951 was adjusted by subtracting the displaced population. Projection was made using the adjusted population for 1951. The growth of the displaced population was also considered while giving the final estimates. The estimate worked out is 28·63 lakhs.

Rural.—A similar method for the population of rural area was adopted. The population figures for the rural area are as follows :—

Year	Population
1921	1,84,032
1931	1,88,804
1941	22,300
1951	3,06,938

The estimate worked out is 4·09 lakhs. The estimates of population for the Delhi State for the year 1971 are as follows :—

Delhi Urban	28·63 lakhs
Delhi Rural	4·09 lakhs

The estimate for the total of Delhi State is 32·73 lakhs. The estimate got by considering the trend of whole of Delhi State is 32·3 lakhs. I believe that difference of 0·4 lakh between the estimates is not significant.

A study of the sex ratio for Urban Area

Year		Males	Females	R = Males / Females
1921		1,82,054	1,22,366	1·49
1931		3,67,979	1,79,463	1·49
1941		4,14,821	2,80,865	1·48
1951	displaced	2,52,220	2,18,166	1·16
	rest	5,67,212	3,99,536	1·42
	total	8,19,432	6,17,702	1·33

The sex ratio 'R' keeps steady up to 1951. It falls to 1·33 in 1951 from 1·42 in 1941. The explanation fror this is the heavy influx of refugees population for which the sex ratio R=1·16. If we correct the 1951 figures, we get for the corrected figures R=1·42. The latest available figure of the ratio for the total urban population which *is* 1·33 *is taken as the standard*. From this the extimates of number of males and females in 1971 can be worked and are as follows :—

The total number of males and females in 1971 is as follows :—

Number of males	16·37 lakhs
Number of females	12·26 lakhs
	28·63 lakhs

Study of Age Groups (Urban Area)

When the census of 1951 was taken, a ten percent sample was taken from the population (excluding the displaced population) and the ages were recorded.

	Males	Females	Persons
Total Population (Excluding Displaced Population).	5,67,212	3,99,536	9,66,748
Sample	57,064	39,605	96,669

The following table shows the distribution of sample population among various age groups —

Age group	Males	Females	Persons
0—4	10,766	8,061	18,827
5—14	12,290	8,925	21,215
15—24	10,950	8,157	19,107
25—54	19,228	12,142	31,370
55	3,830	2,311	6,141
Age not stated	..	9	9
	57,064	39,605	96,669

The percentages in various sub-groups for males, females and persons is given in the following table :— (Sample population).

Age group	Males	Females	Persons
0—4	18·88	20·35	19·46
5—14	21·53	22·45	21·95
15—24	19·19	20·60	19·77
25—54	33·70	30·65	32·46
55	6·70	5·85	6·35
Age not stated	..	0·02	0·01
	100·00	100·00	100·00

The estimates worked out by taking into consideration the displaced population also are as follows :—(1951)

Age group	Males	Females	Persons
0—4	1,15,411	88,294	2,03,705
5—14	1,86,070	1,44,926	3,30,996
15—24	1,60,063	1,32,500	2,92,563
25—54	2,93,917	2,07,747	5,01,664
55	63,936	44,099	1,08,035
Age not stated	35	136	171
	8,19,432	6,17,702	14,37,134

The percentages in various sub-groups are as follows :—

Age group	Males	Females	Persons
0—4	14·08	14·29	14·18
5—14	22·71	23·46	23·03
15—24	19·54	21·45	20·36
55	7·80	7·14	7·52
	100·00	100·00	100·00

A rough estimate of the population distribution for 1971 can be obtained from this. The estimates are as follows :—

The Distribution of the Population of 1971 (Urban)

(ONLY APPROXIMATE)

Age group	Males (in lakhs)	Females (in lakhs)	Persons (in lakhs)
0—4	2·306	1·752	4·058
5—14	3·717	2·866	6·593
15—24	3·199	2·629	5·828
25—54	5·872	4·127	9·999
55	1·276	0·876	2·152
	16,370	12·260	28·630

NOTE.—These figures are not accurate as they are based on the estimated figures of a single year 1951. They only give a rough idea about the distribution.

APPENDIX III

TABLE 1

Motor Vehicular Traffic

S. No.	Class of Vehicle	1950-1951	1951-1952	1952-1953	1953-1954	1954-1955	1955 Dec.
1	Motor Cycles	2,486	2,502	2,709	2,910	3,298	3,589
2	Private Cars	6,904	7,382	7,135	7,355	8,522	9,397
3	Taxies and Motor Rickshaws	564	634	769	972	1,000	1,021
4	Other Public Service Vehicles (e. g. Buses).	325	439	499	520	729	886
5	Goods Vehicles (Trucks)	1,510	1,709	1,586	1,649	2,070	2,386
6	Miscellaneous Motor Vehicles	..	..	1,116	1,236	..	1,446
	TOTAL	11,789	12,666	13,814	14,642	15,619	18,725

Source : Delhi State Transport Department.

TABLE 2

Slow Moving Traffic

S. No.	Class of Vehicles	1950	1951	1952	1953	1954	1955
1	Hand Carts	1,162	1,381	1,452	1,700	1,964	2,229
2	Bullock Carts	1,872	1,806	1,485	1,370	1,525	1,677
3	Tongas	3,871	2,223	2,948	2,576	2,781	2,989
4	Khar Karas	1,298	1,056	937	963	978	994
5	Tum Tums	102	86	15	12	11	10
6	Cycle Rickshaws	600	600	600	600	600	600
7	Cycles	..	..	99,539	1,19,873	1,21,873	1,24,310
	TOTAL	8,905	7,152	1,06,976	1,27,094	1,29,732	1,32,809

Source : Delhi State Transport Department.

TABLE 3

Delhi Transport Service

S. No.	Route No.	Origin	Destination	Total No. of Trips per day	Mileage covered per Trip	Time taken per Trip	Frequency per hour		No. of passengers Travelled in	
							Max.	Min.	October, 1955	March, 1956
					Miles	Minutes				
1	1	Fountain	Indra Nagar	64	6·5	45	3	1	61,423	61,033
2	1 A	Fountain	Timarpur	32	3·5	25	2	1	977	8,144
3	2	Rajouri Garden	Lajpat Rai Market	59	11·0	60	3	1	1,36,987	1,21,606
4	2 A	Moti Nagar	Central Secretariat	2	9·5	40	1	0	23,287	5,017
5	3	Kashmere Gate	C.O.D. Cantonment	92	16·0	80	4	1	2,28,857	2,07,523
6	3 A	Kashmere Gate	Gopinath Bazar	22	..	..	2	0	12,986	14,738
7	3 B	Ajmeri Gate	Gopinath Bazar	14	..	..	..	..	..	14,382
8	4	Radio Colony	East Patel Nagar	45	12·0	75	2	1	1,50,403	1,15,353
9	5	Connaught Circus	Kalkaji	21	11·0	60	2	0	36,413	28,743
10	6	Tilak Nagar	Lodi Colony	158	15·0	80	9	2	4,38,143	3,67,846
11	7	Pusa Institute	Central Secretariat	14	4·0	15-20	6	0	15,015	8,293
12	7 A	Gurdwara Road	Central Secretariat	44	..	..	12	0	..	48,050
13	8	Vinay Nagar	Timarpur	58	13·0	72	3	1	1,17,031	1,11,882

14	8 A	Central Secretariat	Tis Hazari	66	..	..	5	1	17,064	7,531
15	9	Central Secretariat	Kingsway Camp	126	10·0	66	6	2	2,07'536	1,73,891
16	9 A	Central Secretariat	Shakti Nagar	125	10·5	63	6	1	2,20,303	1,97,260
17	9 B	Central Secretariat	Kashmere Gate	41	6·0	36	5	0	79,547	84,379
18	10	Kingsway Camp	East Patel Nagar	48	10·0	64	2	1	78,819	84,970
19	11	Fountain	Shahdara	140	4·0	30	5	2	48,956	1,12,181
20	11A	Fountain	Border	20	6·5	35	1	0	..	16,210
21	12	Ajmeri Gate	Factory Road	58	10·0	54	3	1	1,08,334	94,016
22	13	C. T. O.	Lajpat Rai Market	..	..	..	2	1	1,21,709	96,778
23	14	Turkman Gate	Ring Road							
24	14A	Ajmere Gate	Ring Road		..	..	4	0	15,295	18,713
25	14B	Darya Ganj	Ring Road							
26	15	Old Secretariat	Tin Murti	96	11·0	68	3	2	2,27,829	2,23,472
27	16	Fountain	Najafgarh	52	18·0	75	2	1	1,39,892	1,39,039
28	16A	Fountain	Tilak Nagar	58	..	..	4	1	49,399	45,682
29	16B	Kashmere Gate	Tilak Nagar	47	..	..	3	0	5,41,982	57,450
30	17	Railway Station	Mehrauli	120	13·0	70	5	2	2,24,355	2,46,180
31	18	Railway Station	Okhla	48	10·0	48	2	0	82,216	63,917
32	19	Fountain	Lodi Colony	190	6·5	40	8	3	1,97,189	2,15,205
33	20	Fountain	Krishna Nagar	141	4·0	30	5	2	76,572	1,22,085
34	20A	Fountain	Patpar Ganj	22	7·0	34	2	0	5,110	17,814

TABLE 4

Delhi Transport Service

S. No.	Route No.	Origin	Destination	Total No. of Trips per day	Mileage covered per Trip	Time taken per Trip	Frequency pre hour Max.	Frequency pre hour Min.	No. of passengers Travelled in October, 1955	No. of passengers Travelled in March, 1956
1	21	West Patel Nagar	Kingsway Camp	363	12·0	75	21	5	8,23,925	9,59,773
2	22	West Patel Nagar	Lodi Colony	70	10·0	65	3	1	1,99,971	1,35,058
3	23	Fountain	Nangloi	22	11·5	55	1	0	26,742	23,803
4	24	Dev Nagar	Lajpat Nagar	112	12·0	70	5	2	1,85,363	1,83,123
5	24A	Lajpat Nagar	Central Secretariat	16	7·0	30	4	0	..	..
6	25	Camp Cinema	Lajpat Rai Market	72	6·0	40	3	1	79,892	70,779
7	26	Pusa Institute	Lodi Colony	69	10·0	60	3	1	14,591	1,03,834
8	27	Vinay Nagar	Dev Nagar	74	12·5	72	3	1	1,38,338	1,67,914
9	27A	Vinay Nagar	Central Secretariat	43	4·0	15	9	0	..	..
10	28	Railway Station	Malaviya Nagar	68	13·0	70	3	1	1,67,168	1,62,763
11	28A	Vinay Nagar	Railway Station	15	...	..	6	0	..	..
12	29	Railway Station	Kalkaji	75	..	52	3	1	1,42,151	99,158
13	29A	Railway Station	Chiragh Delhi	13	..	..	1	0	..	13,436
14	29B	Railway Station	Lajpat Nagar	17	..	..	2	0	..	24,888
15	30	Delhi Gate	Kalkaji	41	13·0	68	2	0	86,656	91,381

Traffic Volume

The study of traffic volumes on various major traffic ways is essential for the consideration of how to attain maximum facility and safety in use of existing roads. Such studies demonstrate the relative importance of the various arteries and intersections. They show where traffic signal systems and other control devices through streets, routings, are most warranted. Volume counts are essential in deciding upon one-way regulation, channelisation improvements, parking and no-stopping regulations, high quality street lighting pedestrian protective devices and measures, police post duty etc.

Vehicle volume maps are useful in planning street improvements as, for example, in helping to show where existing routes have reached or are approaching saturation, or where grade separation is needed at key intersections. Volume data not only help to justify expenditures, but also can be very valuable in securing public support for them.

In Delhi peak hour flows are the critical factor. Therefore traffic counts were taken during morning and evening peak hours. Counts of maximum hourly traffic flow were taken at important intersections in business districts, on all important traffic arteries, industrial areas, and other areas of special traffic concentration such as Central Secretariat area, Chandni Chowk area, Connaught Place etc. This has been recorded graphically by means of flow diagrams. Map No. 17 shows the total traffic flow, whereas Map No. 18 shows the flow of cycle traffic alone.*

* The traffic volume survey was conducted by the Central Road Research Institute India, under the direction of Dr. R.K.N. Iyengar.

TABLE 4

Queens Road—Naya Bazar Road

			Per hour	Peak flow (per hour)					
				Fast		Slow		Cyclists	Total
Queens Road	Away from	8-45 to 9-45 A.M.		74 145		70 379		1,241 727	1,385 1,241
Queens Road	Towards	5-15 to 6-15 P.M.		153 73	226	390 141	2,591	1,101 959	1,644 1,173
Queens Road (Near Novelty Cinema).	Towards	6-00 to 7-00 P.M.		184 248	432	457 630	5,377	1,670 2,620	2,301 3,498
Queens Road (Near Novelty Cinema).	Away from	5-30 to 6-30 P.M.		218 186		634 440		2,785 1,593	3,637 2,219
Naya Bazar	Towards	5-15 to 6-15 P.M.		198 83	281	467 173		832 450	1,497 706
Naya Bazar	Away from	9-00 t 10-00 A.M.		81 174		157 284		759 428	997 886
Bridge Connecting Kutab Road.	Away from	5-15 to 6-15 P.M.		99	99	334 17		1,398 867	1,831 884
Bidge connecting Kutab Road.	Towards	9.00 to 10-00 A.M.		1 58		15 231		1,413 500	1,429 789

TABLE 5

Queens Road—Elgin Road

			Peak hour	Peak flow (per hour)						
				Fast		Slow		Cyclists		Total
Elgin Road (South)	Away from		5-00 to 6-00 P.M.	398 326		44 43		1,152 695		1,594 1,064
Elgin Road (South)	Towards		9-30 to 10-30 A.M.	475 538	1,013	65 72	2,056	1,041 878	1,919	1,581 1,488
Elgin Road (North)	Away from		9-30 to 10-30 A.M.	332 326	658	99 65	2,216	1,204 848	2,052	1,635 1,239
Elgin Road (North)	Towards		5-00 to 6-00 P.M.	329 253		30 47		1,448 572	2,020	1,807 872
Queens Road	Towards		5-30 to 6-30 P.M.	189 161	350	120 85		454 237	691	763 483
Queens Road	Away from		8-30 to 9-30 A.M.	145 191		178 77	948	380 313	693	703 581
Jumna Bridge Road	Away from		6-00 to 7-00 P.M.	100 93	193	142 106	1,007	492 267	759	734 466
Jumna Bridge Road	Towards		8-30 to 9-30 A.M.	123 62		171 53		504 173	677	798 288

TABLE 6

Rohtak Road—Najafgarh Road

Name of Road	Direction	Peak hour	Peak flow (per hour)					
			Fast		Slow		Cyclists	Total
Rohtak Road (East)	Away from Intersection.	4-45 to 5-45 P.M.	78	78	51	831	780	909
Do.	Towards	6-00 to 7-00 P.M.	52		39		530	621
Rohtak Road (West)	Away from	6-00 to 7-00 P.M.	29		19		439	487
Do.	Towards	5-00 to 6-00 P.M.	49	49	33	555	520	602
Najafgarh Road (South)	Away from	6-00 to 7-00 P.M.	27		19	398	379	425
Do.	Towards	4-45 to 5-45 P.M.	39	39	17		370	426
Najafgarh Road (North)	Away from	4-45 to 5-45 P.M.		24	14	449	435	473
Do.	Towards	6-00 to 7-00 P.M.	13		6		435	454

TABLE 7

Old Rohtak Road—Shakti Nagar Road

Name of the Road	Direction	Peak Hour	Peak Flow (Per Hour)						
			Fast		Slow		Cyclists		Total
Old Rohtak Road (West)	Towards	8-15 to 9-15 P.M.	20 31	51	26 54	1,188	839 269	1,108	885 354
,,	Away from	6-00 to 7-00 P.M.	29 20		28 25	179	825 301	1,126	882 346
Old Rohtak Road (East)	Away from	8-15 to 9-15 A.M.	10 11	21	25 32	773	542 174	716	577 217
,,	Towards	5-45 to 6-45 P.M.	22 8	30	26 24		478 177		526 209
Serai Rohilla Road (South)	Away from	5-45 to 6-45 P.M.	36 31	67	9 14		462 421	883	507 466
,,	Towards	5-30 to 6-30 P.M.	31 24		11 7	907	456 433	889	498 464
Shaktinagar Road	Towards	6-00 to 7-00 P.M.	39 35	74	8 9	1,008	653 338	991	700 382
,,	Away from	5-00 to 6-00 P.M.	36 36		17 7		465 351		518 394

TABLE 8

Azadpur

Name of the Road	Direction	Peak Hour	Peak Flow (Per Hour)							
			Fast		Slow		Cyclists		Total	
Kingsway Camp Road	Away from	7-15 to 8-15 A.M.	20		7		108		135	
			30	50	1	155	37	145	68	
,,	Towards	5-30 to 6-30 P.M.	21	..	..		123	147	144	
			28		1		24		53	
G. T. Road (North)	Towards Delhi	7-15 to 8-15 A.M.	43		28		359		430	
			55	98	34	532	111	470	300	
,,	Away from Delhi	5-30 to 6-30 P.M.	55		10		326		391	
			32		10		96		138	
G T. Road (South)	Towards	6-30 to 7-30 P.M.	22		20	498	372	464	414	
			23		14		92		129	
,,	Away from	7-30 to 8-30 A.M.	45	83	33		270		348	
			38		38		120		196	

TABLE 9

Mall Road—Timarpur Road

Name of the Road	Direction	Peak Hour	Peak Flow (Per hour)						
			Fast		Slow.		Cyclists		Total
Mall Road (East)	Away from	9-00 to 10-00 A.M.	79 84		4 6	1,075	733 332	1,065	816 422
"	Towards	5-15 to 6-15 P.M.	81 97	178	5 5		503 255		589 357
Mall Road (West)	Away from	9-30 to 10-30 A.M.	71 84	155	6 7		356 406		433 497
	Towards	9-15 to 10-15 A.M.	78 70		4 6	775	438 327	765	520 403
Timarpur Road	Away from	5-15 to 6-15 P.M.	20 16		6 6		356 104		382 128
"	Towards	9-15 to 10-15 A.M.	31 20	51	4 2	570	479 85	569	514 107

TABLE 10

G. T. Road (Subzimandi)—Shaktinagar Road

Name of the Road	Direction	Peak Hour	Peak Flow (Per hour)						
			Fast		Slow		Cyclists		Total
Shaktinagar Road	Away from	6-00 to 7-00 P.M.	39 45	84	21 12	734	475 226	701	535 283
,,	Towards	9-00 to 10-00 A.M.	47 34		11 15		467 194		525 243
Subzimandi Ghanta Ghar Road.	Away from	8-30 to 9-30 A.M.	67 41	108	87 68	1,413	872 386	1,258	1,026 495
,,	Towards	6-00 to 7-00 P.M.	35 40		86 81		731 420		852 541
G. T. Road (West)	Away from	5-45 to 6-45 P.M.	39 37		67 56		626 387		732 480
,,	Towards	8-30 to 9-30 A.M.	66 56	122	63 60	1,193	718 352	1,070	847 468
Memorial Road	Towards	5-15 to 6-15 P.M.	60 51	111	12 11		318 224		390 286
,,	Away from	9-00 to 10-00 A.M.	45 30		7 15	643	439 182	621	491 227

TABLE II

Mori Gate Road—Hamilton Road

Name of the Road	Direction	Peak Hour	Peak Flow (Per Hour)							
			Fast		Slow		Cyclists		Total	
Mori Gate Road	Towards	8-45 to 9-45 A.M.	180 74	254	272 62		563 409		1,015 545	
,,	Away from	9-15 to 10-15 A.M.	69 164		87 217	1,365	521 540	1,061	677 921	
G. T. Road	Away from	5-00 to 6-00 P.M.	57 74		132 300		744 458		933 832	
,,	Towards	9-00 to 10-00 P.M.	90 45	135	343 205	1,834	933 353	1,286	1,366 603	
Hamilton Road	Away from	9-30 to 10-30 A.M.	42 31	73	93 136		513 422		648 589	
,,	Towards	5-00 to 6-00 P.M.	29 28		78 61	1,202	634 429	1,063	741 518	
Dufferin Bridge Road	Towards	5-30 to 6-30 P.M.	98 175		162 481		799 711		1,059 1,367	
,,	Away from	9-00 to 10-00 A.M.	234 95	329	546 290	2,567	1,118 613	1,731	1,898 998	

TABLE 12

Kashmeri Gate

Name of the Road	Direction	Peak Hour	Peak Flow (Per Hour)						
			Fast		Slow		Cyclists		Total
Kashmeri Gate (Outside)	Away from	9-30 to 10-30 A.M.	445	737	142	2,471	1,326	2,236	1,913
Kashmeri Gate (Outside)	Towards	9-30 to 10-30 A.M.	292		93		910		1,295
Wall Road	Towards	8-45 to 9-45 P.M.	12 14		90 99		178 107	285	280 200
Wall Road	Away from	8-30 to 9-30 A.M.	18 11	29	105 108	493	118 162	280	239 281
Circular Road	Away from	5-00 to 6-00 P.M.	33 20		17 8		363 109		413 137
Circular Road	Towards	9-30 to 10-30 A.M.	49 40	89	102 90	819	419 208	627	570 338
Court Road	Towards	9-15 to 10-15 A.M.	209 94	403	87 22	778	490 179	669	786 295
Court Road	Away from	10-00 to 11-00 A.M.	116 193	409	78 74		162 338		326 605
Alipur Road	Towards	5-00 to 6-00 P.M.	156 142		8 8		790 348		954 498
Alipur Road	Away from	9-15 to 10-15 A.M.	171 241	412	49 13	1,310	711 537	1,248	931 791

Chandni Chowk—Elgin Road.

Name of the Road	Direction	Peak Hour	Peak Flow (Per Hour)						
			Fast		Slow		Cyclists		Total
Chandni Chowk	Towards	6-00 to 7-00 P.M.	222		159		918		1,299
			252	474	118		640	1,558	1,010
Chandni Chowk	Away from	5-00 to 6-00 P.M.	244		106		1,047		1,397
			200		147	2,039	739	1,786	1,086
Elgin Road (South)	Away from	9-00 to 10-00 A.M.	485		64		878		1,427
			461		76	2,177	1,159	2,037	1,696
Elgin Road (South)	Towards	9-15 to 10-15 A.M.	535		74		1,149		1,758
			483	1,018	52		826		1,351
Elgin Road (North)	Away from	5-15 to 6-15 P.M.	332		37		834		1,203
			369	701	51	1,671	759	1,593	1,179
Elgin Road (North)	Towards	8-30 to 9-30 A.M.	388		48		933		1,369
			216		25		426		667
Red Fort Road	Towards	5-00 to 6-00 P.M.	39		19		279		337
			48	87	28		276		352
Red Fort Road	Away from	5-45 to 6-45 P.M.	42		31		433		506
			35		27	738	247	680	309

TABLE 14

Mori Gate Road—Boulevard Road

Name of the Road	Direction	Peak Hour	Peak Flow (Per Hour)									
			Fast		Slow		Cyclists		Total			
Mori Gate Road (North)	Away from	9-15 to 10-15 A.M.	35 44	79	18 27	45	306 126	432	359 197	477		
Mori Gate (North)	Towards	5-00 to 6-00 P.M.	26 24	50	10 3	13	298 77	375	334 104			
Mori Gate Road (South)	Towards	9-30 to 10-30 A.M.	99 166	265	98 263	361	514 571	1,085	711 1,000	1,446		
Mori Gate Road (South)	Away from	9-15 to 10-15 A.M.	157 88	245	266 79	345	581 470	1,051	1,004 637			
Circular Road	Towards	5-00 to 6-00 P.M.	36 32	68	10 6	16	328 95	423	374 133	530		
Circular Road	Away from	9-30 to 10-30 A.M.	52 31	83	48 17	65	388 77	465	488 125			
Circular Road	Towards	9-30 to 10-30 A.M.	69 41	110	160 27	187	492 156	648	721 224	835		
Boulevard Road	Away from	5-00 to 6-00 P.M.	31 51	82	22 59	81	263 172	445	316 282			
Quidsia Road.	Towards	9-15 to 10-15 A.M.	175 75	250	176 14	190	663 109	772	1,014 198	962		
Quidsia Road.	Away from	5-00 to 6-00 P.M.	77 74	151	12 27	39	334 244	578	423 345			

TABLE 15

Name of the Intersection	Direction	Peak Hour	Peak Flow (Per Hour)							
			Fast		Slow		Cyclists		Total	
Parliament Street .	South bound	9-45 to 10-45 A.M.	267		30		..		..	
	(Away from)		263	530	27		..		..	
,, . . .	North bound .	4-30 to 5-30 P.M.	311		74		..	2,259	..	
			183		28	2,361				
Irwin Road . . .	South West bound.	5-00 to 6-00 P.M.	330	563	36	1,497	828	1,427	1,194	
,, . . .	South East bound.	5-00 to 6-00 P.M.	233		34		599		866	
Minto Road . . .	North bound .	9-30 to 10-30 A.M	365	744	21		501	1,282	887	
,, . . .	South bound .	9-30 to 10-30 A.M.	379		9		781		1,169	
Queensway . . .	South bound .	9-30 to 10-30 A.M.	319		36		1,256		1,611	
,, . . .	North bound .	5-00 to 6-00 P.M.	287		43		548		878	
,, . . .	North bound .	5-00 to 6-00 P.M.	272		37		2,027		2,336	
			440	712	33	2,705	608	2,635	1,081	
Wellesley Road .	North bound .	9-30 to 10-30 A.M.	169		36		903		1,108	
			60	229	18	1,120	163	1,066	241	
,, . . .	South bound .	4-30 to 5-30 P.M.	124		10		611		745	
			97		18		285		400	
Shahjahan Road . .	South bound .	4-30 to 5-30 P.M.	226		24		..		..	
			178		35	1,500	..	1,441	..	
,, . . .	North bound .	9-15 to 10-15 A.M.	237		13		..		..	
			190	427	21		..		..	

TABLE 16

Rajpath—Janpath

Name of the Road	Direction	Peak hour.	Peak Flow (Per Hour)					
			Fast		Slow		Cyclists		Total
Janpath (North)	Away from	9-15 to 10-15 A.M.	157 119		7 14		720 353		884 486
„	Towards	5-00 to 6-00 P.M.	157 130	287	9 9	1,273	830 425	1,255	996 564
Janpath (South)	Towards	9-15 to 10-15 A.M.	116 91		7 11		637 332		760 434
„	Away from	5-00 to 6-00 P.M.	119 98	217	7 9	1,110	679 415	1,094	805 522
Rajpath (West)	Towards	5-00 to 6-00 P.M.	144 78	222	2 1	463	285 175	460	431 254
„	Away from	9-30 to 10-30 A.M.	122 97	219	0 —		261 162		383 259
Rajpath (East)	Towards	9-15 to 10-15 A.M.	136 94	230	2 0		223 161		361 255
„	Away from	5-00 to 6-00 P.M.	141 80	221	4 1	468	288 175	463	433 256

TABLE 17

Connaught Circus

Name of the Intersection	Direction	Peak Hour	Peak Flow (Per Hour)						
			Fast		Slow		Cyclists		Total
Parliament Street—Connaught Circus (West)	Away from	5-15 to 6-15 P.M.	390 341	631	130 48	2,711	2,117 421	2,538	2,637 805
,, ,, ,,	Towards	9-30 to 10-30 A.M.	289 242		78 73		1,740 362		2,107 677
Parliament Street—Connaught Circus (East)	Away from	9-30 to 10-30 A.M.	450 370	820	61 73		1,043 289		1,554 732
,, ,, ,,	Towards	5-00 to 6-00 P.M.	411 370		46 43	1,921	1,358 474	1,832	1,815 887
Punchkuin Road—Connaught Circus (South)	Towards	5-00 to 6-00 P.M.	302 215	517	119 77	2,953	2,073 684	2,757	2,494 976
,, ,, ,,	Away from	9-30 to 10-30 A.M.	257 202		123 101		1,530 399		1,910 702
Minto Road—Connaught Circus (West)	Towards	5-00 to 6-00 P.M.	204	392	32	2,198	985	2,132	1,221
,, ,, ,,	Away from	5-00 to 6-00 P.M.	188		34		1,147		1,369
Queensway—Connaught Circus (East)	Away from	5-00 to 6-00 P.M.	346		38		442		826
,, ,, ,,	Towards	5-00 to 6-00 P.M.	396	742	34	1,402	888	1,330	1,318
Queensway—Connaught Circus (West)	Away from	5-00 to 6-00 P.M.	404 431		53 38		1,482 457	1,959	1,939 926
,, ,, ,,	Towards	9-30 to 10-30 A.M.	471 391	862	49 60	2,050	1,163		1,683

TABLE 18

Shankar Road—Upper Ridge Road

Name of the Road	Direction	Peak Hour	Peak Flow (Per Hour)						
			Fast		Slow		Cyclists		Total
Shankar Road (West)	Towards	9-15 to 10-15 A.M.	252	252	1	3,062	3,061	3,061	3,314
,, ,, ,,	Away from	5-15 to 6-15 P.M.	174 85	259	1 3		2,032 365		2,207 453
Shankar Road (South)	Towards	5-15 to 6-15 P.M.	149		1		1,772		1,929
,, ,, ,,	Away from	9-15 to 10-15 A.M.	225 108	333	1 2	2,710	2,587 120	2,707	2,838 230
Upper Ridge Road (South)	Both Directions	8-30 to 9-30 A.M.	54	54	8	59	51	51	113
Upper Ridge Road (North)	Towards	9-00 to 10-00 A.M.	35 21	56	4 1	99	78 16	94	117 38
,, ,, ,,	Away from	6-00 to 7-00 P.M.	32 20		0 0		48 17		80 37
Mandir Lane (Lovers Lane)	Towards	5-30 to 6-30 P.M.	25 37	62	0 3		253 176	429	278 216
,, ,, ,,	Away from	9-00 to 10-00 A.M.	27 13	40	0 0		474 34	508	501 47

TABLE 19

Great Place

Name of the Road	Direction	Peak hour	Peak Flow (Per Hour)						
			Fast		Slow		Cyclists		Total
President's Estate	Towards	5-00 to 6-00 P.M.	149 69	218	1 0	253	227 25	252	377 94
Do.	Away from	9-30 to 10-30 A.M.	172 85	257	1 0		103 80		276 165
Rajpath	Towards	9-15 to 10-15 A.M.	143 88	230	0 0	323	174 149	323	316 237
Do.	Away from	3-00 to 6·00 P.M.	97 87		1 0		201 88		299 175
Great Place (South)	Towards	9-15 to 10·15 A.M.	428	721	25	4,460	2,502	4,403	2,955
Do.	Away from	9-15 to 10-15 A.M.	293		32		1,901		2,226
Great Place (North)	Towards	5-00 to 6-00 P.M.	375 303	678	17 19	4,426	2,214 2,176	4,390	1,606 2,498
Do.	Away from	9-30 to 10-30 A.M.	405 411	816	15 31		2,402 1,610	4,010	2,822 2,052

TABLE 20

Shankar Road—Patel Nagar Road

Name of Road	Direction	Peak Hour	Peak Flow (Per Hour)						
			Fast		Slow		Cyclists		Total
Dev Nagar Road	Towards	9-00 to 10-00 A.M.	82	82	5	859	884	884	971
Do.	Away from	5-00 to 6-00 P.M.	56		12		489		557
Pusa Road	Away from	9-00 to 10-00 A.M.	114	114	14		646		774
Do.	Towards	6-00 to 7-00 P.M.	77		10	738	728	728	815
Pusa Institute Road	Away from	5-00 to 6-00 P.M.	30		1		500		531
Do.	Towards	4-45 to 5-45 P.M.	43	43	5	1,193	1,188	1,188	1,236
Shankar Road	Towards	5-00 to 6-00 P.M.	126	126	2		1,051		1,179
Do.	Away from	9-00 to 10-00 A.M.	97		1	1,217	1,216	1,216	1,314
Patel Nagar Road	Towards	9-00 to 10-00 A.M.	149	149	17		1,292		1,458
Do.	Away from	5-00 to 6-00 P.M.	130	..	9		1,334		1,473

TABLE 21

Wellingdon Crescent

Name of the Road	Direction	Peak Hour	Peak Flow (Per Hour)							
			Fast		Slow		Cyclists		Total	
Tin Murti	Away From	9-00 to 10-00 A.M.	46		4		191		241	
Do.	Towards	5-00 to 6-00 P.M.	28	74	..		56		84	
Kitchner Road	Away from	5-30 to 6-30 P.M.	27		2		220		249	
			22		2	282	58	278	82	
Do.	Towards	5-30 to 6-30 P.M.	102		8		151		261	
			..	168			..	715		
Wellingdon Crescent	Towards (from W. Hospital)	15 to 10-15 A.M.	66		7		564		637	
			..				..			
Do.	Away from (Towards W. Hospital)	5-30 to 6-30 P.M.	58		11		291		360	
			81		10		180		271	
			65	163	9		575	787	649	
			98		10	806	212		320	

TABLE 22

Panchkuin Road—Reading Road

Name of the Road	Direction	Peak Hour	Peak Flow (Per Hour)							
			Fast		Slow		Cyclists		Total	
Panchkuin Road (East)	Towards	5-15 to 6-15 P.M.	278 169		5 10		2,057 461		2,340 640	
				510		2,553		2,518		5,058
Do.	Away from	9-15 to 10-15 A.M.	382 128		9 7		2,222 287		2,613 422	
Panchkuin Road (West)	Away from	5-15 to 6-15 P.M.	303 225		12 16		3,044 818		3,359 1,059	
				566		3,890		3,862		7,752
Do.	Towards	9-15 to 10-15 A.M.	396 170		13 9		3,294 399		3,703 578	
Reading Road (South)	Towards	5-15 to 6-15 P.M.	84 73		20 23		1,941 698		2,045 794	
				175		2,682		2,639		5,321
Do.	Away from	9-00 to 10-00 A.M.	92 83		19 16		1,810 233		1,921 332	
Reading Road (North)	Away from	5-45 to 6-45 P.M.	12 8		21 28		168 205		201 241	
				20		449		422		891
Do.	Towards	5-15 to 6-15 P.M.	7 6		17 10		271 151		295 167	

TABLE 23

East Park Road—Ram Jhansi Road

Name of Road	Direction	Peak Hour	Peak Flow (Per Hour)							
			Fast		Slow		Cyclists		Total	
Rani Jhansi Road (South)	Towards	5-15 to 6-15 P.M.	87 158	245	32 108	722	332 250	582	451 516	
Do.	Away from	9-00 to 10-00 A.M.	134 112	246	82 34		398 188	586	614 334	
East Park Road	Away from	5-15 to 6-15 P.M.	5 39		6 59		1,101 485	1,586	1,112 583	
Do.	Towards	9-00 to 10-00 A.M.	63 ..	63	135 5	1,942	1,298 504	1,802	1,496 509	
Rani Jhansi Road (North)	Away from (Towards D.C.M.)	9-00 to 10-00 A.M.	168 128	296	164 91	2,622	1,493 874	2,367	1,825 1,093	
Do	Towards (from D.C.M.)	5-15 to 6-15 A.M.	162 129		106 86		1,451 890	2,341	1,719 1,105	
Original Road	Away from	9-00 to 10-00 A.M.	100 58		83 65		1,056 410	1,466	1,239 533	
Do.	Towards	5-45 to 6-45 P.M.	112 58	170	124 85	2,032	1,369 454	1,823	1,605 597	

TABLE 24

Pusa Road—Faiz Road

Name of Road	Direction	Peak Hour	Peak Flow (Per Hour)							
			Fast		Slow		Cyclists		Total	
Pusa Road	Away from	5-30 to 6-30 P.M.	139 117	256	9 9		1,152 349	1,501	1,300 475	
Pusa Road	Towards	9-15 to 10-15 A.M.	231 67	298	9 5	1,532	1,292 226	1,518	1,532 298	
Faiz Road	Away from	5-15 to 6-15 P.M.	90 100		4 4	1,584	1,324 252	1,576	1,418 356	
Faiz Road	Towards	9-00 to 10-00 A.M.	130 75	215	7		1,298 155		1,435 230	
Arya Samaj Road	Away from	5-15 to 6-15 P.M.	186 157	343	11 10	1,846	1,479 346	1,825	1,676 513	
Arya Samaj Road	Towards	9-00 to 10-00 A.M.	201 139	340	12 6		1,113 248		1,326 393	
Gurgaon Road	Towards	5-15 to 6-15 P.M.	30 8				68 25		98 33	
Gurgaon Road	Away from	9-00 to 10-00 A.M.	32 20	52	7	134	103 24	127	142 44	

TABLE 25

Lahori Gate

Name of Road	Direction	Peak Hour	Peak Flow (Per Hour)							
			Fast		Slow		Cyclists		Total	
Naya Bazar	Towards	9-00 to 10-00 A.M.	57 68		152 223		864 383	1,247	1,073 674	
Naya Bazar	Away from	5-00 to 6-00 P.M.	70 67	137	273 237	1,814	707 597	1,304	1,050 901	
Khari Baoli	Towards	6-00 to 7-00 P.M.	34 6	40	384 194	2,832	1,191 1,063	2,254	1,609 1,263	
Khari Baoli	Away from	5-30 to 6-30 P.M.	7 27		185 303		1,085 1,090		1,277 1,414	
Kutab Road (Bridge)	Away from	5-30 to 6-30 P.M.	61 67	128	110 237	2,494	1,550 597	2,147	1,721 901	
Kutab Road	Towards	9-00 to 10-00 A.M	57 51		152 121		864 706		1,073 878	
Lahori Gate	Towards	5-30 to 6-30 P.M.	73 72		319 409	2,355	990 637	1,627	1,382 1,118	
Lahori Gate	Away from	9-00 to 10-00 A.M.	86 69	155	319 234		1,112 491	1,603	1,517 794	

TABLE 26

Shahdara Road—Jumuna Bazaar

Name of Road	Direction	Peak Hour	Peak Flow (Per Hour)						
			Fast		Slow		Cyclists		Total
Shahdara Road (West)	Towards	5-30 to 6-30 P.M	5		4		326		335
			5	10	2	421	89	415	96
Do.	Away from	9-00 to 10-00 A.M.	3		4		228		235
			1		10		92		103
Shahdara Road (East)	Towards	8-45 to 9-45 A.M.	55		124		476		655
			54		51		166		271
Do.	Away from	6-00 to 7-00 P.M.	54		83		772		909
			56	110	76	1,139	208	980	340
Jamuna Bazaar (North)	Towards	9·00 to 10·00 A.M.	9		47		190		246
			6		57	433	139	329	202
Do.	Away from	5-45 to 6-45 P.M.	17		34		176		227
			19	36	24		75		118
To Jumnua (from J. Bridge Road).	Towards	6-00 to 7-00 P.M.	74		124		651		849
			75		88	1,126	263	914	426
To Jumuna (Towards J. Bridge Road).	Away from	8-45 to 9-45 A.M.	95		181		543		819
			68	163	90		204		362

TABLE 27

Ajmeri Gate

Name of Road	Direction	Peak Hour	Peak Flow (Per Hour)					
			Fast		Slow		Cyclists	Total
Asaf Ali Road	Towards	4-30 to 5-30 P.M.	676		46		713	826
			64	131	46		472	582
						1,185		
Asaf Ali Road	Away from	9-15 to 10-15 A.M.	69		44		920	1,033
			60		38	1,299	297	395
							1,217	
Desh Bandhu Gupta Road	Away from	5-45 to 6-45 P.M.	214		287		1,725	2,226
			122	336	164	2,986	810	1,096
							2,535	
Desh Bandhu Gupta Road	Towards	9-15 to 10-15 A.M.	121		238		1,513	1,872
			144		158		607	909
Ajmeri Gate Road	Both Directions	5-45 to 6-45 P.M.	73	73	433	2,255	1,822	2,328
							1,822	
G. B. Road	Away from	5-15 to 6-15 P.M.	89		122		1,038	1,249
			95		136	1,906	610	841
							1,648	
G. B. Road	Towards	9-00 to 10-00 A.M.	117		159		1,042	1,318
			84	201	151		458	693
Thompson Road	Towards	5-15 to 6-15 P.M.	199		176		2,165	2,538
			95	294	97	2,927	491	683
							2,654	
Thompson Road	Away from	9-15 to 10-15 A.M.	58		131		1,401	1,590
			197		148		646	991
Circular Road	Away from	8-30 to 9-30 A.M.	82	82	51	220	169	302
							169	

TABLE 28

Delhi Gate

Name of the Road	Direction	Peak Hour	Peak Flow (Per Hour)							
			Fast		Slow		Cyclists		Total	
Faiz Bazar	Towards	9-15 to 10-15 A.M.	653 558	1,211	25 50	75	1,099 1,383	2,482	1,757 1,991	2,664
Do.	Away from	5-15 to 6-15 P.M.	649 611		55 28		1,599 982		2,303 1,621	
Circular Road	Away from	9-00 to 10-00 A.M.	344 258	602	50 25	75	581 339	920	975 622	1,021
Do.	Towards	5-15 to 6-15 P.M.	342 332	674	26 17	43	462 516	978	830 865	
Mathura Road	Away from	9-15 to 10-15 A.M.	254 306	560	22 24	46	1,044 945	1,989	1,320 1,275	2,035
Do.	Towards	5-15 to 6-15 P.M.	294 191	485	22 23	45	1,018 755	1,773	1,334 969	
Bela Road	Towards	8-45 to 9-45 A.M.	27 25	52	24 9	33	286 102	338	337 136	421
Do.	Away from	5-15 to 6-15 P.M.	37 33	70	15 9	24	174 167	340	226 209	
Asaf Ali Road	Towards	5-30 to 6-30 P.M.	113 59	172	24 17	341	569 323	892	706 399	933
Do.	Away from	9-30 to 10-30 A.M.	78 70	148	22 28	50	363 417	780	463 515	
Darya Ganj Road	Away from	...	30 38	68	10 19	29	128 132	260	148 189	289

TABLE 29

Hardinge Bridge Roundabout

Name of the Road	Direction	Peak Hour	Peak Flow (Per Hour)								
			Fast		Slow		Cyclist		Total		
Mathura Road (South)	Towards	9-15 to 10-15 A.M.	134 94	228	12 17	29	381 151	532	527 262	590	
Mathura Road (South)	Away from	5-45 to 6-45 P.M.	103 77	180	11 22	33	357 200	557	471 229		
Mathura Road (North)	Towards	9-15 to 10-15 A.M.	384	818	38		1,238	2,405	1,660	3,223	
Mathura Road (North)	Away from	9-15 to 10-15 A.M.	434		27		1,167		1,628		
Hardinge Avenue	Towards	5-00 to 6-00 P.M.	135 112	247	13 11	24	759 487	1,246	907 610	1,451	
Hardinge Avenue	Away from	9-15 to 10-15 A.M.	148 121	269	17 21	38	777 636	1,413	942 778		
Sikandra Road	Away from	9-15 to 10-15 A.M.	145 121	266	3	3	248 205	453	393 329	469	
Sikandra Road	Towards	5-00 to 6-00 P.M.	129 142	271	6 3	9	250 210	460	385 355		

TABLE 30

Jumna Bridge (West)—Bela Road

Name of the Road	Direction	Peak Hour	Peak Flow (Per Hour)							
			Fast		Slow		Cyclists		Total	
Jumna Bridge Road (East)	Towards	8-30 to 9-30 A.M.	15 6	21	12 11	23	144 72	216	171 89	252
Jumna Bridge Road (East)	Away from	5-30 to 6-30 P.M.	7 6		20 20	40	147 65	212	174 91	
Jumna Bridge Road (West)	Away from	8-30 to 9-30 A.M.	23 15		24 22	46	162 80	242	209 117	362
Jumna Bridge Road (West)	Towards	5-30 to 6-30 P.M.	19 22	41	34 33	67	200 95	295	253 150	
Jumna Bridge	Towards	9-00 to 10-00 A.M.	139 88	227	137 69	206	1,811 395	2,216	2,087 552	2,890
Jumna Bridge	Away from	5-30 to 6-30 P.M.	66 64		136 73	209	2,165 516	2,681	2,367 653	
Bela Road	Away from	5-30 to 6-30 P.M.	13	18	4		47	49	64	52
Bela Road	Towards	5-30 to 6-30 P.M.	18		3		49		70	

TABLE 31

Nizamuddin Roundabout

(Near Police Post)

Name of the Road	Direction	Peak Hour	Peak Flow (Per Hour)							
			Fast		Slow		Cyclists		Total	
Mathura Road (South)	Towards	9·00 to 10·00 A.M.	296		30		980		1,306	
			136	432	24	1,269	235	1,215	395	
Do.	Away from	5·15 to 6·15 P.M.	212		23		777		1,012	
			209	421	27		417	1,194	653	
Mathura Road (North)	Away from	9·00 to 10·00 A.M.	280		21		1,014		1,315	
			142	422	23		307		472	
Do.	Towards	5·15 to 6·15 P.M.	214	407	25		1,005		1,244	
			193		33	1,512	449	1,454	675	
Lodi Road	Towards	9·00 to 10·00 A.M.	73		1		380		454	
			47	120	2	498	115	495	164	
Do.	Away from	5·45 to 6·45 P.M.	60		3		217		280	
			48		4		135		187	
Humayun Tomb Road	Away from	8·30 to 9·30 A.M.	7	14	..		30		37	
			7		4		24		35	
Do.	Towards	4·30 to 5·30 P.M.	4		1		60		65	
			4		1	73	11	71	16	

TABLE 32

Lodi Road

Name of the Road	Direction	Peak Hour	Peak Flow (Per Hour)									
			Fast			Slow			Cyclists			Total
Lodi Road (West)	Towards	5·15 to 5·30 P.M.	87			8			215			310
			97	184		6			218	433		321
Lodi Road (West)	Away from	5·00 to 6·00 P.M.	97			7			231			335
			86			8	449		203	434		297
Lodi Road (East)	Towards	9·00 to 10·00 A.M.	63			5			217			285
			53	116		3			129			185
Lodi Road (East)	Away from	4·45 to 5·45 P.M.	53			8			241			302
			50			4	463		210	451		264
Lodi Road (North)	Away from	9·00 to 10·00 A.M.	74			8			1,756			1,838
			54			9	1,919		146	1,902		209
Lodi Road (North)	Towards	5·15 to 6·15 P.M.	82			8			1,449			1,539
			52	134		11			182			245
Lodi Road Avenue	Towards	9·00 to 10·00 A.M.	94			6			1,414			1,514
			58	152		8			150	1,564		216
Lodi Second Avenue	Away from	5·00 to 6·00 P.M.	69			8			1,484			1,561
			50			6	1,664		166	1,650		222
Jor Bagh Road	Away from	5·15 to 6·15 P.M.	24			2			122			148
			25	49		3			139	261		167
Jor Bagh Road	Towards	9·30 to 10·30 P.M.	26			16			210			252
			11			8	335		101	311		120

TABLE 33

Jangpura

Name of the Road	Direction	Peak Hour	Peak Flow (Per Hour)							
			Fast		Slow		Cyclists		Total	
Jangpura (East)	Away from	5·30 to 6·30 P.M.	17		8		124		149	
Jangpura ,,	Towards	5·30 to 6·30 P.M.	48	65	11	373	230	354	289	
Jangpura (West)	Towards	5·45 to 6·45 P.M.	14		..		45		59	
			23	27	1		15		29	
Jangpura (West)	Away from	8·30 to 9·30 P.M.	11		..		65		76	
			12		1	80	14	79	27	
Jangpura (North)	Away from	9·00 to 10·00 A.M.	35		6		582		623	
			8	43	5	703	110	692	123	
Jangpura (North)	Towards	5·30 to 6·30 P.M.	9		10		435		454	
			27		12		209	644	248	
Jangpura (South)	Towards	8·45 to 9·45 P.M.	75		14		718		369	
			54	129	18	1029	217	997	289	
Jangpura (South)	Away from	5·45 to 6·45 P.M.	49		15		631		695	
			52		10		362	993	424	

TABLE 34

Hauz Khas

Name of the Road	Direction	Peak Hour	Peak Flow (Per Hour)								
			Fast		Slow		Cyclists		Total		
Qutab Minar Road	Towards	5·30 to 6·30 P.M.	55 45	100	6 2	8	648 89	737	709 136	746	
Qutab Minar Road	Away from	8·30 to 9·30 A.M.	67 57	124	2 4	6	604 136	740	673 197		
Hauz Khas (South)	Towards	8·00 to 9·00 A.M.	39 22	61	4 2	6	203 107	310	246 131	333	
Hauz Khas (South)	Away from	5·30 to 6·30 P.M.	28 31	69	1	1	283 49	332	322 80		
Hauz Khas (East)	Towards	7·00 to 8·00 A.M.	32 16	48	7 2	9	324 55	379	363 73	388	
Huaz Khas (East)	Away from	5·45 to 6·45 P.M.	21 17	36	6 4	10	319 30	349	346 51		

TABLE 35

Qutab Road—Vinay Nagar Road

Name of the Road	Direction	Peak Hour	Peak Flow (Per Hour)						
			Fast		Slow		Cyclists	Total	
Vinay Nagar Road	Away from	4·45 to 5·45 P.M.	77 98	175	13 20	43	489 578	1,067	579 696	3,016
Vinay Nagar Road	Towards	9·00 to 10·00 A.M.	105 61	166	11 6	17	2,738 261	2,999	2,854 328	
Qutab Road (South)	Away from	5·15 to 6·15 P.M.	89	186	9	26	1,205	3,093	1,304	3,119
Qutab Road (South)	Towards	5·15 to 6·15 P.M.	97		17		1,888		2,002	
Qutab Road (North)	Away from	9·00 to 10·00 A.M.	207 166	373	35 23	58	3,198 499	3,697	3,440 688	3,755
Qutab Road (North)	Towards	5·15 to 6·15 P.M.	181 177	358	26 44	70	2,909 710	3,619	3,116 931	
Sewanagar Road	Away from	5·15 to 6·15 P.M.	5 3	8	3 5	8	714 722	1,436	722 730	1,444
Sewanagar Road	Towards	5·30 to 6·30 P.M.	2 6	8	6 3	9	723 708	1,431	731 717	

TABLE 36

Safdarjang

Name of the Road	Direction	Peak Hour	Peak Flow (Per Hour)							
			Fast		Slow		Cyclists		Total	
Qutab Road (North)	Towards	5·15 to 6·15 P.M.	363 208	571	22 18	3,012	2,527 445	2,972	2,912 771	
Qutab Road (North)	Away from	9·00 to 10·00 A.M.	319 196		34 28		1,112 231		1,465 455	
Qutab Road (South)	Away from	5·15 to 6·15 P.M.	172 178		23 19	3,215	2,563 610	3,173	2,758 807	
Qutab Road (South)	Towards	9·00 to 10·00 A.M.	282 182	464	27 29		2,434 487		2,743 698	
Safdarjang (East)	Towards	9·00 to 10·00 A M.	121 65	186	9 4		343 235		473 304	
Safdarjang (East)	Away from	5·15 to 6·15 P.M.	75 66		2 3	890	595 290	885	672 359	

TABLE 37

Flow of Cyclists (Morning)

Serial No.	Name of the Street	Width of the cycle track	9.00 9.15	9.15 9.30	9.30 9.45	9.45 10.00	10.00 10.15	10.15 10.30	10.30 10.45	10.45 11.00	Total	9.00 9.15	9.15 9.30	9.30 9.45	9.45 10.00	10.00 10.15	10.15 11.30	10.30 10.45	10.45 11.00	Total
1	Parliament St.	12′	221	390	374	642	739	267	150	126	3,012	6	2	1	5	6	8	6	0	34
					2,259						98.8%									
2	Curzon Road	10′	135	163	160	214	164	89	111	94	1,130	27	15	23	35	11	12	13	16	152
					785						88.1%	...								
3	Hastings Road	9′	96	155	194	121	44	9	13	9	641	388	457	869	648	163	93	93	64	2,775
					2,928						19·3%									
4	Shahjahan Road	9½′	214	213	273	454	435	153	72	69	1,883	10	13	15	20	18	14	3	2	95
					1,441						95·2%									
5	Great Place	9½′	132	131	162	240	243	120	81	87	1,196	151	180	375	708	655	208	96	87	2,471
						2,722					32.7%	...								
6	Tughlak Road	9′	237	275	583	426	175	83	76	38	1,893	21	3	18	15	4	6	3	44	114
					1,578						94.4%									

REMARKS : 1. The cyclists are guided to cycle tracks by a policeman. Riding qualities of the cycle track—good.
2. Access to houses are provided at short distances. Riding qualities of the cycle track—fair.
3. Access to houses are provided at short distances. Riding qualities of the cycle track—bad.
4. Riding qualities of the cycle track—good.
5. Nearside lane of the carriage way reserved for cyclists by white line markings. Riding qualities of the cycle track—good.
6. The cyclists are guided to cycle tracks by a Police man. Riding qualities of the cycle track—good.

Flow of Cycles (Evening)

Serial No.	Name of the Street	On the Cycle Track								Total	On the Carriage Way								Total
		4.00 4.15	4.15 4.30	4.30 4.45	4.45 5.00	5.00 5.15	5.15 5.30	5.30 5.45	5.45 6.00		4.00 4.15	4.15 4.30	4.30 4.45	4.45 5.00	5.00 5.15	5.15 5.30	5.30 5.45	5.45 6.00	
1	Parliament St.	108	152	116	168	620	724	495	240	2,623	12	19	12	10	25	27	17	4	126
						2,152													
2	Curzon Road	96	68	70	81	105	131	110	130	791	16	10	6	8	10	9	6	12	77
										91%									
3	Hastings Road	87	52	14	12	25	30	25	63	308	30	63	100	195	703	670	491	369	2,621
						2,376				10.5%									
4	Shahjahan Road	93	96	88	153	333	271	218	226	1,478	9	14	16	32	82	35	22	29	239
						1,216				86.1%									
5	Great Place	56	63	71	83	349	272	197	162	1,253	89	107	129	116	226	283	209	231	1,390
										47.4%									
6	Tughlak Road	53	65	36	30	58	120	83	208	653	7	19	41	66	209	271	195	35	843
						1,179				43·6%									

APPENDIX IV.

During the past six months the Town Planning Organisation has conducted a random sample survey among the inhabitants of some *'Katras'* within the corporate limits of the Delhi Municipal Committee. The survey was not a true random sampling of the area, so that it is doubtful whether any statistically valid conclusions can be drawn from the material gathered, but the survey does give a general idea of living conditions within the slums of Delhi.

The technique employed was to question one or two persons at random in each *'Katra'*, during the course of the inspection trips that were made at that time. A general questionnaire was drawn up and the interviewers recorded the answers in the space provided. These answers were tabulated upon return to the office, and the detailed tabulation is attached to this report. The major categories covered by the questionnaire related to the economic position of the family, housing conditions, civic and community facilities in the area. Certain generalizations are possible from the data gathered, and these are listed below:

Economic Position.—About 60 per cent. of the wage earners are labourers, mill workers, coolies, etc. In Ward II (Subzi-mandi area) almost 90 percent. of the working people are *"mandi"* employees. The average monthly income is about Rs. 75 and each family pays a rent of about Rs. 5 to Rs. 6 a month. In some *'Katras'* the income level is higher with many craftsmen earning over Rs. 150 a month, while in other *'Katras'* the income level is as low as Rs. 50 a month.

Housing Conditions.—Cattle sheds and animal stables are found in about 20 per cent. of the *'Katras'* and their presence contributes to the insanitary living conditions. The biggest cattle shed in the city, with over 300 head of cattle is located in Sarai Khalil on Idgah Road. The milkmen, tongawallas and other petty traders live cheek by jowl with their animals. More than 75 per cent. of the buildings in the various *'Katras'* are structurally unsound, and will require major repair before they are habitable. In some cases demolition is the only answer for the shacks and hovels that make up the slum areas.

Civic Facilities:

Water supply—The public tap is the only source of water in almost all the *'Katras'* for private taps and hand pumps are almost non-existent.

Electricity—it is a rare *'Katra'* that has provision for electric light.

Sewage Disposal—Public latrines or the maunal type are found in most of the *'Katras'*. Water-borne latrines are not generally provided.

Community Facilities—There are no parks, no playgrounds and few schools for the inhabitants of the *'Katras'*.

Inspite of these generally depressing conditions, a majority of the slum dwellers are unwilling to move out of their neighbourhoods for two reasons. Most of them live near their work places, and they are afraid of disrupting their economic pattern by moving away from their places of employment. Others have a sentimental attachment to their hearth, home, and community and are willing to move out only if their community ties are retained and preserved in a new location.

APPENDIX IV

S. No.	Ward No.	Name of the Katra/Basti	Area in square yards	No. of Families	Economic Position			Civic Facilities			Housing conditions	No. of children	Nearby School	No. of cattle stationed	Ready to move out
					Occupation	Monthly income	Monthly rent D/U	Water	Refuse	Electricity					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	XI	Kucha Chelan	556	About 12	Sellers in vegetables—labourers	Rs. 50	Rs 5	No	Public	No	Bad (about 100 years old)	About 25	Yes	..	Ready.
2		Kucha Chelan	576	About 10	Labourers	50	3	Public	(bucket)	No	Moderate (100 years)	About 25	Yes	No	Half minded.
3		Kucha Fulad Khan	1,645	About 25	Labourers	50	4	Public	Public	No	Bad (150 years)	About 75	No	No	Ready.
4		Kucha Fulad Khan	1,077	About 30	Tongawalas and Cobblers	100	6	Public	Public	No	Bad (150 years)	About 100	Yes	Yes	Ready.
5	IX	Kucha Mir Ashiq	326	About 15	Petty Traders	75	8	Private	(bucket)	No	Bad (100 years)	..	..	No	No
6		Pahari Rajan	391	About 15	Labourers, Arts, Crafts	75	..	Public		Yes (temporary)	Bad (100 years)	..	No	No	Ready.
7		Gali Tahsildarwali Phari Bhojla	531	About 15	Embroidery	100	150 for 15 families	Private	(bucket)	Yes	Moderate (100 years)	About 60	Yes	No	Ready
8	XIV	Gali Ghebwali Pan-Mandi	389	About 14	Shopkeepers	75	6	Public	Private	Yes	Moderate (75)	3 in each	Yes	No	Ready
9		Idgah Road Sarai Khalil Area	32,942	About 600	Business with all sort of shops	75	5	Public	Bucket	No	Bad (100 years)	5 in each	Yes	Total 290	No
10		Poch Chamarsa	951	About 20	Tongawalas	75	7	Public	Bucket	No	Bad (100 years)	5 in each	Yes	Yes	Ready.
11	XV	Gali Saligram	2,117	About 50	Labourers	75	5—7	Private	Bucket	No	Bad (100 years)	..	Yes	No	Ready
12		Nabi Karim	488	About 15	Sweepers	50	3—4	Public	Public	No	Bad (75 years)	5—7 in each	Yes	Yes	Not Ready (must be compelled).
13		Nabi Karim	348	About 9	Labourers	50	4—6	Public	Public	No	Bad (75 years)	4 in each	Yes	Yes	Not Ready.
14		Nabi Karim	774	About 33	Labourers	50	2—4	Public	Public	No	Bad (100 years)	4—7 in each	Yes	No	Easy to make ready.
15		Nabi Karim	774	About 23	Labourers	50	2½—4	Public	Public	No	Bad (75 years)	5—7 in each	..	Yes	Not Ready.
16		Nabi Karim	650	About 40	Huts to rent refugees	50	3	Public	Public	No	Dilapidated (100 years)	5 in each	Yes	No	Ready.
17		Dariba Pan	369	About 12	Labourers	50	2—5	Public	Public	Yes	Moderate (75)	5 in each	..	No	May be persuaded.
18		Dal Mandi	734	About 5	Labourers	75	5	Public	Public	No	Bad (75 years)	5 in each	..	Yes	May be persuaded.
19		Original Road (142)	859	About 45	Refugees	75	..	Public	Public	Yes	Moderate (75 years)	4—7 in each	Yes	Yes	
20		Nai Basti	900	About 75	Cobblers	50	2	Public	Public	No	Bad (75 years)	6 in each	Yes	No	Better to move.
21		Arainchan	1,097	About 40	Mistri	75	4—5	Public	Public	No	Bad (100 years)	4—6 in each	Yes	Yes	Not Ready.
22		Sangtarashan	1,221	About 50	Labourers	50	4	Public	Public	No	Bad (75 years)	4—7 in each	No	No	Not Ready.
23	XII	Malka Ganj	185	About 20	Sellers and Govt. Employees	75	3	Public	Public	No	Bad (100 years)	4 in each	No	No	Ready.
24		Malka Ganj	800	About 17	Labourers	75	5—8	Public	(bucket)	No	Moderate (100 years)	5 in each	No	No	Ready.
25		Main Bazar Area (Subzimandi)	770	About 44	Mill Employees	75	5	Private/Public	Manual	Yes	Bad (100 years)	5 in each	Yes	No	No
26		Main Bazar Area (Subzimandi)	2,856	About 40	Employees	75	5	Public	(bucket)	No	Bad (100 years)	Average 5	Yes	No	Ready.
27		Main Bazar Area (Subzimandi)	2,035	About 50	Labourers	75	7—9	Public	(bucket)	No	Bad (100 years)	6 in each	Yes	No	No
28		Malka Ganj	773	About 25	Workers	75	7—9	Public	Manual	No	Bad (75 years)	5 to 8 in each	No	No	Ready.
29		Malka Ganj	543	About 30	Labourers	75	7—9	Public	Manual	No	Bad (75 years)	4 in each	No	No	No
30		Malka Ganj	1,225	About 40	Labourers	75	4	Public	Manual	No	Bad (75 years)	5 to 7 in each	No	No	No
31		Malka Ganj	680	About 15	Labourers	75	4—5	Public	(bucket)	No	Bad (75 years)	5 in each	No	No	No
32		Malka Ganj	2,278	About 50	Shopkeepers	100	7—10	Public	Manual	No	Bad (75 years)	4 to 6 in each	Yes	No	No
33		Sarai Phose	3,396	About 65	Labourers, Chaprasies	75	3—6	Public	Public	No	Bad (100 years)	6 to 13 in each	No	No	Ready.
34		Arya Pura	858	About 18		50	2	Public	Public	No	Bad (75 years)	3 to 13 in each	No	No	Not ready.
35		Arya Pura	564	About 55	Chana, Ice Sellers	50	2	Public	Public	No	Bad (75 years)	4 in each	Yes	No	Not Ready.
36		Arya Pura	725	About 10	Potters and Mill Workers	50	3—5	Public	Public	No	Bad (75 years)	5 in each	No	No	Ready to move if accommodation is good Ready.
37		Arya Pura	540	About 35	Labourers	75	2	Public	Public	No	Dilapidated (75 years)	5 in each	Yes	No	Better to move.
38		Rahat Ganj, R. A. Road	1,031	Except 5 rest	Labourers tongawalas.	75	5	Public	Public	Yes	Bad (50 years)	4 to 6 in each	No	Yes	Not Ready
39		Saburgarh, R. A. Road	245	About 5	Shopkeepers and Labourers	75	3	Public (H. Pump)	Private	Yes (in 2)	Moderate (75 years)	4 to 6 in each	No	No	Not Ready.
40		Mohalla Kharim	307	About 12	Shopkeepers and part-time Labourers.	50	5	Public	Public	No	Bad (75 years)	5 in each	No	No	Not Ready.
41		Chandrawal	784	About 30 to	Labourers	50	2	Public	Manual		Bad (75 years)	6 in each	Yes	No	